Gas Journal

LIGHT · HEAT · POWER · BYE-PRODUCTS

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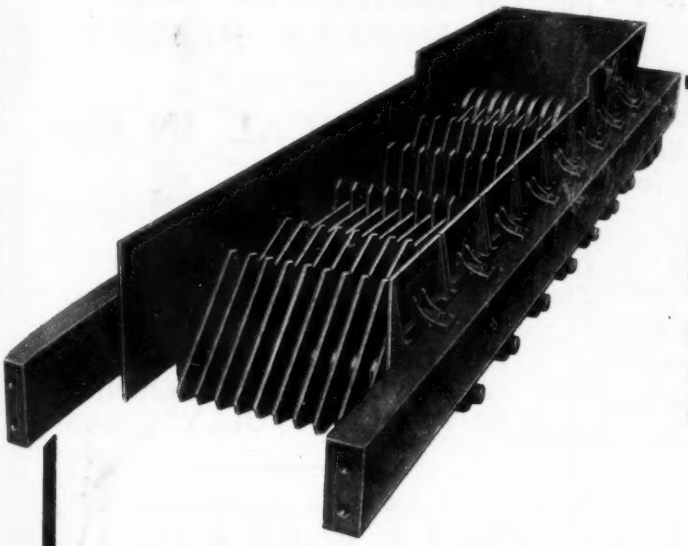

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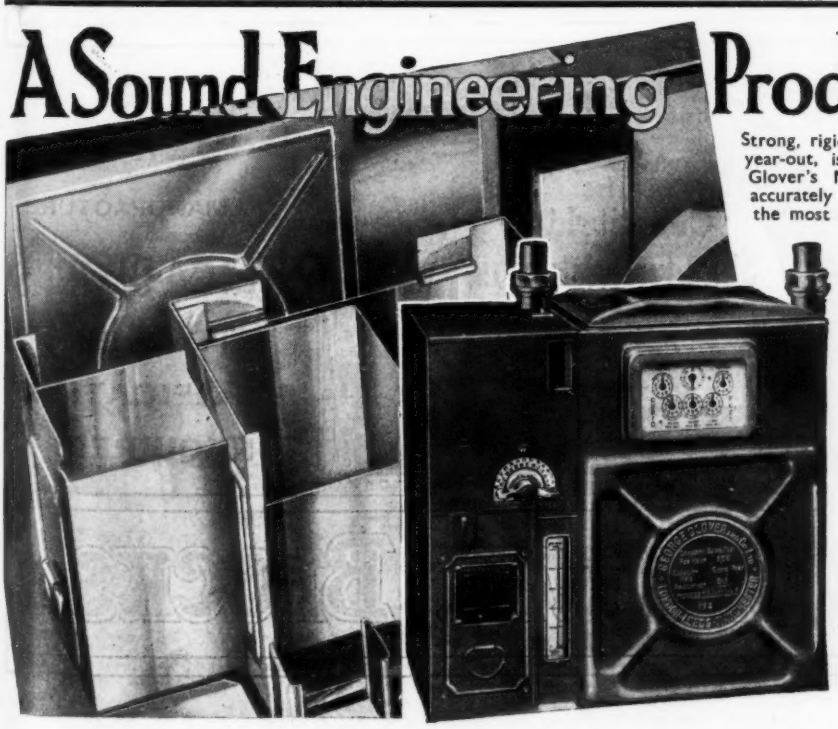

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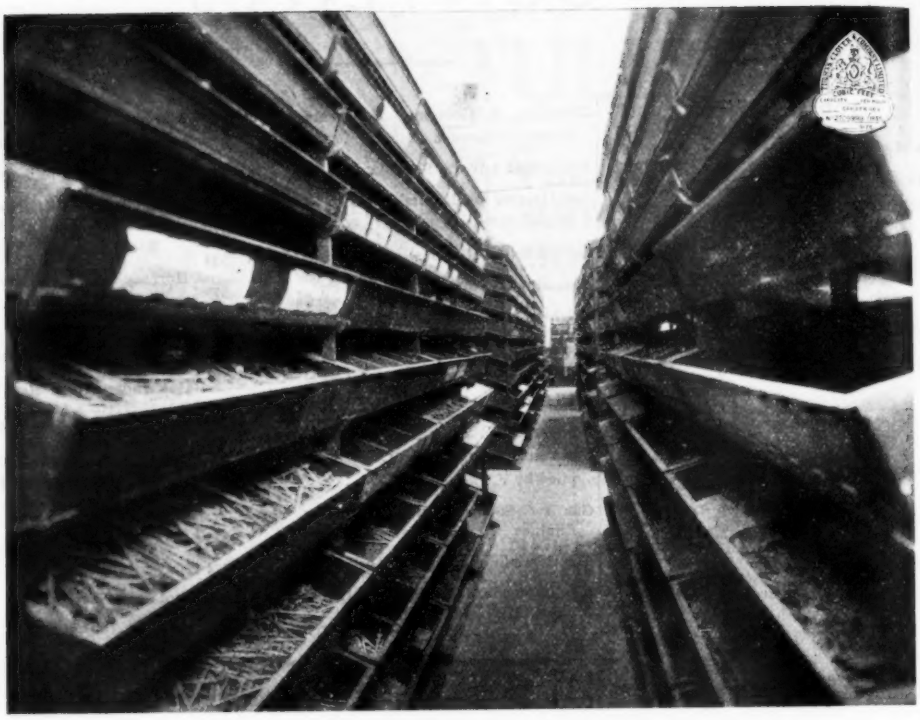

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Gas Journal

MARCH 6, 1935

Vol. 209. 87th Year No. 3746.

Editorial Notes

Solid Smokeless Fuel

In the "JOURNAL" last week we mentioned that the Gas Industry is selling only 7,600,000 tons of coke annually and that the potential market is at least 40 million tons in the domestic field alone. Realizing that there is a growing public demand for a smokeless solid fuel for water heating, central heating, and the open firegrate, we suggested that a thorough self-examination on the possibilities of the coke market would reveal to the Gas Industry a state of ignorance it will not wish to tolerate. As a first step towards better sales we urged a measure of economic research. We must find what we want, and then set out to get it.

There is much conflict of opinion as to the type or types of coke the Industry should market, and in this regard there is no doubt, of course, that local circumstances play a major part. As far as the domestic market is concerned, however, the problem resolves itself into two parts—the production of a smokeless fuel which will give complete satisfaction when burned in existing grates designed for burning coal, and the production of coke which will give complete satisfaction in grates specially constructed for its use. The second solution is the easier, and we are glad to see what progress is being made by enterprising undertakings which are installing thousands upon thousands of coke grates annually. But this is not a complete solution of the problem, and we think that the time is ripe for the Gas Industry to consider coke sales from both angles, our reason being that if we neglect the market someone else will step in and capture it. Our point of view is simple enough. We believe that, by regarding itself as a Products Industry, the Gas Industry can vastly widen its scope. Concentration on one product—gas—will cripple the expansion of an Industry with tremendous possibilities and will, in fact, retard the selling of gas itself. We are not suggesting any slackening in our efforts to sell more gas; we ask for more effort and a far higher standard of salesmanship than exists in our Industry to-day. But we ask also for a wider outlook and much more confidence in the Industry as a whole. This outlook will mean more work and greater personnel—a bigger Industry giving more employment. There is nothing far-fetched in this vision.

Opinions Differ

We have mentioned the conflict of opinion on the question of the type of coke the Industry should produce. The Chemical Department of the South Metropolitan Gas Company, in their recently published book on "The Solid Products of the Carbonization of Coal," state that "a smokeless solid fuel, readily ignitable and freely burning in the ordinary domestic grate can be obtained by the carbonization of coal at temperatures below 700° C." They go so far as to say that a carbonized solid fuel to be used in the place of coal in existing open fires *must* be produced at temperatures below 700° C. Even when a coke is marketed for burning in specially constructed grates, they maintain it is essential that this coke should have a minimum volatile therm content of 2½ therms per ton if it is to give satisfaction to the user. Ease of ignition, they state, is mainly dependent on the volatile therm content of the coke. Then we recollect a striking sentence in the written reply of Capt. J. Fraser Shaw and Dr. J. G. King to the discussion on their paper before the Institution of Gas Engineers last June: "It is our general opinion that smokeless fuel must contain a certain minimum of volatile matter and that this should be distributed as uniformly as possible through the fuel; the minimum would seem to be about 4-5%." In view of that it is something of a paradox that active carbon is "rejuvenated" by steaming at 900° C.; and we are led to query whether volatile matter may be not so essential if the structure of the coke is right. In other words, is it the volatile matter which helps a bad structure? We also bear in mind the fact that the residue from a gas coke fire will light perfectly easily in any open grate.

Carbonizing Blends

It is interesting to turn to the work of Mr. Gibson at Liverpool. "There is a tremendous field for the sale of solid smokeless domestic fuel. My own Undertaking has created a market for a high-temperature fuel; the sales are rapidly increasing, and it seems that there is the biggest market throughout the country for a fuel such as the one we are producing." We quote Mr. Gibson's remarks at the Institution Meeting last June. The process at Liverpool is high-temperature carbonization of mixtures of carefully selected coal. The coke produced is dry-cooled in a Sulzer chamber and is efficiently screened. Marketed under the name "Dryco" it can be lighted with paper and wood in the ordinary way, and it has been found very satisfactory not only in open grates of various kinds, but also in kitchen ranges, slow combustion stoves, and hot water boilers. A paper read by Mr. Gibson before the National Smoke Abatement Society ends thus: "It has been clearly shown that a good solid smokeless fuel can be produced on a working scale by high-temperature carbonization at reasonable cost

without interfering unduly with the gas-making process as usually carried out by most gas undertakings. If proper care is taken in manufacture, the fuel produced will burn well in any ordinary open grate and will fully satisfy the need for a good smokeless fuel." Now in that paper there was an interesting table showing, among other things, the relation between the volatile content of the coke and the gas required for ignition. From this the author concludes that the volatile matter present in the fuel is not a determining factor as regards its ignitability. For instance, in one test the blend was carbonized at 1,100° C. and the volatile matter of the coke was only 1·46%. Yet it ignited with only 6 c.ft. of gas, whereas a similar mixture, carbonized at 1,070° C. produced fuel containing 1·92% of volatile matter, but required 20 c.ft. of gas for ignition. As we have said, experts differ.

The whole question of blending requires more elucidation, and we are looking forward to publication of the results of the mixing and blending plants at the Beckton and the Southall Works of the Gas Light and Coke Company. It is two years since Mr. Hollings described these plants ("JOURNAL" for Feb. 15, 1933), so that interesting and valuable information must have been gained. The plant at Southall incorporates a low-temperature carbonizing unit and was designed to test out commercially several alternative processes, with the aim of producing cokes of high combustibility coupled with suitable density and mechanical strength. Work by many investigators over a long period has indicated the importance of the possibilities of blending. Mr. Gibson's idea is to interfere as little as possible with the normal gas-works process in producing a satisfactory smokeless fuel for the open fire-grate, but we see no reason, if it is proved to be a paying proposition, why the manufacture of such a fuel should not be carried out as a sort of adjunct to the production of gas. If smokeless solid fuel is a revenue-earning proposition the Gas Industry has nothing to lose if in its production there is a low yield of gas. Indeed, a low yield in the first instance might prove a help rather than a hindrance. As an example of the possibilities of blending and carbonizing at temperatures other than those employed for gas making there is the manufacture of Carbolux at the plant of the Compagnie des Mines de Bruay. Not long ago Dr. Koppers described in the "JOURNAL" the working of this process. In essence the method is simple. Pre-heated oxidized coal is mixed with coking coal and the mixture is carbonized in narrow ovens at a temperature of 680°-720° C. Dr. Koppers claims that the coke made is a domestic fuel *par excellence*, and is particularly suitable for use in the open grate, and that its manufacture is definitely an economic proposition. Our reason for mentioning this process is simply to give point to our contention that if we neglect the smokeless solid fuel market someone else will step in and capture it.

Effective Salesmanship

LET us for a moment leave the technical aspect of the question and call attention to what can be done in selling high-temperature coke for use in specially designed fire-grates. On later pages of our issue to-day Mr. S. C. E. Fox, of the Tottenham and District Gas Company, explains how his Undertaking tackled the business and with what success. His story makes very good reading, and it is significant that, with a properly organized Coke Sales Department, the sales of gas of the Tottenham Company, in spite of unfavourable weather conditions, showed an increase of 128 million c.ft., or 3·35%, last year. The intensive and skilfully planned scheme at Tottenham is described by Mr. Fox, and the results which he is able to record should prove an incentive to other undertakings who may have a lukewarm attitude to the coke market, in the belief that "things will stay put." There is no need here to go into any detail in regard to the scheme at Tottenham, but we would call particular attention to the remarks of Mr. Fox on the controversial question of whether coke grates displace gas fires. Throughout the Tottenham sales campaign records are kept of all grates installed and the types of heating appliance they displace. Of the total fitted, 4% have displaced gas fires. Investigation of these cases, however, shows that the gas fires were used for continuous heating and were comparatively costly to run, and that they would have been removed irrespective of the availability of the coke grate.

The London Gas Companies

WE are again indebted to Mr. F. J. Bradfield, the General Manager and Secretary of the Commercial Gas Company, for his useful and interesting analysis, which appears elsewhere in this issue, of the working results for the past year of the three Metropolitan and six of the Suburban Gas Companies. Comparing the figures for last year with those of 1933, it is a satisfactory feature that, while in the latter year seven of the nine companies had to record decreases in the sales of gas, in 1934 only three companies were adversely affected in this respect, despite the fact that during the last two months of the year temperatures were higher than they have been for this period for over half-a-century. The Tottenham Company recorded the highest increase at 3·35%.

The makes of gas per ton of coal in the majority of cases are a little below those of 1933. A notable increase in the make of coke for sale is that of the Wandsworth Company, which increased by 1 cwt. per ton of coal—viz., from 8·39 cwts. to 9·39 cwts. The make of tar was better on the whole, Lea Bridge again leading with 15·86 gallons. As before, there are some large differences in the makes of ammoniacal liquor, the South Metropolitan Company being again top with 40·98 gallons, while the Wandsworth figure is 24·69 gallons only.

Turning to the revenue account costs per therm sold, it is satisfactory to note that by reason of reductions in the cost of coal, oil, &c., and the higher receipts from residuals, all the companies with the exception of Croydon, show a substantial reduction in the cost of net coals, oil, &c., the Commercial being again the cheapest at 0·94d. per therm. The net cost of gas into holder is lower all round, with Gas Light the cheapest at 2·66d. and Commercial again second at 3·07d. per therm. Total distribution costs show a universal increase. The total expenditure, less residuals, is reduced in every case with the exception of the Commercial Company, which shows an increase from 7·76d. to 7·87d. mainly by reason of higher distribution costs, and the South Metropolitan Company, whose cost is the same as a year ago.

Apart from a small increase by the Wandsworth Company for the second half of 1933, the price charged for gas in the principal areas of supply has remained the same for the last two years, but the receipts per therm sold were less last year in all cases except two, the Wandsworth and Hornsey Companies being the same as for 1933. The Commercial was the only Company to return a deficit on the year's working, and this is partly attributable to the higher distribution costs referred to above, and partly to the lower receipts from gas per therm sold, doubtless due to an extension of discounts.

Comparing the sundry items at the bottom of the analysis, it will be noticed that the cost per ton of coal

carbonized shows an all-round reduction, the South Metropolitan being again the cheapest at 19s. 4d. per ton. The net receipts from coke per ton were better, two companies having an increase of over 1s.; tar was a varying figure with little change over 1933. Only two companies showed a loss on ammoniacal liquor compared with six companies in 1933, while Commercial again had the best yield at 1s. 5½d. per butt.

"Startability"

THE system for the steam heating by gas of heavy motor engines, of which we give an illustrated description in this week's "JOURNAL," is not only one which will prove of considerable interest to the Gas Industry in opening up an entirely new field for gas, but is also of importance to the road transport industry. The idea has been developed by the Gas Light and Coke Company's Industrial Centre at Watson House, in conjunction with the Company's Transport Department and Motor Repair Shops; and in so far as it formed the subject of a recent Industrial Centre Report it may possibly have already been studied by some undertakings. The valuable new load which may be obtained by the Industry by reason of the very wide scope for the application of the system, however, leads us to consider it worthy of more general publicity. Indeed, we are reliably informed that it has, at this early stage, already created much interest in various quarters.

Arrangements have been made for a prominent engineering firm to supply and fix the necessary equipment; but it should be emphasized that the process has not been patented, so that it may be entrusted to any competent firm of heating engineers. It must be appreciated, however, that this heating system will be in direct competition with other heating work now being undertaken by various contractors, and it is hoped that, following the wise precedent previously set by many gas undertakings, this difficulty will be overcome by suitable co-operation with the firms concerned.

The process is not limited to the heating of heavy lorry engines, for it will also find a useful application in the rapidly growing service of road passenger transport and short-stage motor 'buses, not to mention its potentialities in the sphere of emergency vehicles, such as fire engines, ambulances, &c., whose immediate "getaway" is of paramount importance. This method of heating will be in competition with electric immersion heaters, which are already being employed in a similar manner; and in this connection it may be of interest to note that in order to obtain an equivalent heating effect a loading of 1·3 KW. would be required. In addition, instead of distilled water being automatically supplied to the radiator as by this gas steam-heating principle, with all its attendant advantages, with the electric immersion system water is evaporated from the radiator. Moreover, the possibility of a failure of the power supply introduces a risk of freezing which will be taken into consideration by the far-seeing road transport operator.

The "Black Patch"

IN the course of an inquiry last week into the circumstances under which a motor-car knocked down and fatally injured a man and his wife, we read that "police and other witnesses mentioned a dangerous 'black patch' at the spot where the accident occurred." This evidence may have been altogether misconceived; we hope it was. But whether or not the blame was rightly laid in this particular case, it cannot be denied that the amounts allocated to public lighting are all too frequently entirely out of proportion to the service that is required. Day by day, with growing traffic problems, the importance of this service becomes ever greater. The responsibility for public lighting, of course, rests upon the shoulders of local authorities; the normal procedure being for the gas undertaking or the electricity concern, as the case may be, merely to carry out instructions.

In spite of this fact, however, it is appropriate that the subject should be referred to here, because, if gas be the illuminant employed—the electricians can be left to advance their own claims—such is the state of perfection to which public lighting appliances have been brought that there need be no "black patches." Therefore it would be a pity if, while people continue to be killed or maimed at the present astounding rate on roads all over the country, "black patches" should be allowed to remain in areas calling for adequate lighting. Seeing that it is in so excellent a position to supply a remedy, it is up to the Gas Industry to be unceasing in its endeavours to make people "public lighting minded." A sufficiency of public lighting costs money, but it is so vital that cost should not be allowed to form the prime consideration. Should the call for economy become irresistible, there doubtless will be other directions in which it may be more profitably sought.

Those who think the time may come when the question of public lighting in general will require to be considered on more comprehensive lines, may quote in justification of their views the report of a poll in a small place in Surrey on the subject of whether or not there should be street lighting. Though the votes cast were seventeen to one in favour of "donning the garb of civilization" in this respect, the report goes on to say that "the poll had to be declared void, because the necessary percentage of ratepayers had not voted. If another two hundred persons had done so, and even if they had all voted against the proposal to have street lighting, the poll would have complied with the regulations, and the place would have had its street lights." The Chairman of the Council announced that, as he read the Standing Orders, they could not have another poll for five years! Apparently, too, the position is further complicated by the fact that another village which forms part of the Council's area does not want street lighting, and is strongly opposed to helping to defray the cost of street lighting in the remainder of the area.

Such matters as have been touched upon here would seem to indicate the need for some reform of the principles governing street lighting. Failing this, it is permissible to conclude that we are still a long, long way from the fading out of the last "black patch" in a built-up area.

1935 "JOURNAL" DIRECTORY

Page 2. ALTRINCHAM. H. R. S. Williams, E. & M., deceased.

Page 8. BILLINGBOROUGH. Works closed down.

Page 80. BRIDGE OF ALLAN. Undertaking acquired by Stirling Gas Light Company.

Page 86. KILBIRNIE. W. B. Morton appointed M.

Page 117. S.B.G.I. M. W. Burt appointed Secretary vice A. L. Griffith retired.

Page 118. CORNISH GAS ASSOCIATION. R. Morton (St. Austell) elected President.

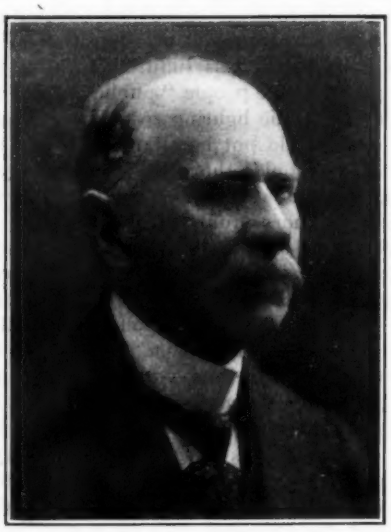
Page 122. BRITISH ROAD TAR ASSOCIATION. W. H. Oatley appointed Secretary vice M. W. Burt resigned.

Page 126. EDINBURGH. N. G. Wilson appointed Public Lighting Superintendent vice R. Beveridge retired

Personal

S.B.G.I. Secretaryship.

After thirty years' service as Secretary of the Society of British Gas Industries, Mr. Arthur L. Griffith relinquished this position to enter a well-earned retirement on March 1. Mr. Griffith has held the Secretaryship since the beginning of the Society, which, in its 21st Anniversary brochure, acknowledged as the inspiration of its inception a leading article in the "JOURNAL" in December, 1904, calling attention to the desirability of forming an Institution of Gas Plant Apparatus Makers. Mr. Charles Clare enthusiastically acted upon the suggestion and called together a number of manufacturers at the close of the Earl's Court Gas Exhibition. The outcome of that meeting was the formation of the Society, and the first meeting was held in March, 1906. At the same time, Mr. Griffith was appointed permanent Secretary, and his assiduous interest in the affairs of the Society and unfailing courtesy at all times have in no small degree promoted its success, and at the



Mr. Arthur L. Griffith.

same time endeared him to all with whom he came into contact. Indeed, Mr. Griffith's career is synonymous with the progress of the Society, which has grown to its present dimensions from an original membership of 36 firms. It will be recalled that at the Annual Meeting of the Society in May, 1931, Mr. Frank West presented Mr. Griffith with a cheque as a token of the esteem of the Council and Past-Chairmen for the work he had done during a quarter of a century of service as Secretary.

His very numerous friends in the Industry will join with us in wishing Mr. Griffith many years of happy retirement.

* * *

Mr. Griffith's successor in the position of Secretary to the S.B.G.I. bears a name already well-known in many quarters of the Gas Industry. He is Mr. M. W. BURT, who has been, since November, 1928, Secretary to the British Road Tar Association. Prior to his appointment with this Association, Mr. Burt was Secretary to the World Power Conference and was associated with the organization of international conferences in this and other countries. He is also acting as General Secretary to the Chemical Engineering Congress to be held in June next year under the auspices of the World Power Conference.

* * *

Mr. W. H. OATLEY succeeds Mr. Burt in the Secretaryship of the British Road Tar Association.

* * *

Mr. JAMES HUGHES COOKSEY, Secretary of the Bridgnorth Gas Department, recently celebrated his 86th birthday. It is claimed that Mr. Cooksey is the oldest municipal official in the country.

* * *

For forty-four years Mr. THOMAS BROWN has served the Matlock and District Gas Company as General Manager and Engineer and his services were recognized by a presentation, following the annual meeting of the Company on March 1. The Matlock Company will shortly be taken over by the Sheffield Company, and Mr. Brown will take a well-earned rest. It is his intention to visit New Zealand with his wife and daughter for a reunion with two brothers whom he has not seen for over 40 years.

The gifts consisted of an illuminated address, a silver tea service, a silver tray, and a silver cigarette box. The presentation was made by Mr. E. H. Bailey, Chairman of the Directors.

* * *

At a staff dinner of the Hartlepool Gas and Water Company held on Feb. 26 presentations were made to Mr. GEORGE NEIL, Works Manager, who is leaving the Company to take up the position of Works Superintendent under the Southampton Gaslight and Coke Company. Mr. Neil received a solid silver tea service from the Directors of the Company and a crystal rose bowl from the workmen as a mark of their appreciation.

Obituary

We regret to announce the death of Mr. WILLIAM SISSON, Chairman and founder of the firm of W. Sisson & Co., Ltd., Engineers, Gloucester, which took place at his residence, Chosen House, Hucclecote, near Gloucester, on Feb. 22.

* * *

The death occurred on Feb. 27, at the age of 85, of Sir JOHN GRICE, the well-known Australian barrister and Chairman of the Metropolitan Gas Company of Melbourne. Sir John was also a Director of the National Bank of Australia and many other companies.

Forthcoming Engagements

March.

7.—I.G.E.—Gasholder Committee, 2.30 p.m.
7.—MIDLAND JUNIOR ASSOCIATION.—Meeting and Paper by Mr. L. W. Hathaway.
9.—SCOTTISH JUNIOR ASSOCIATION.—Joint Visit to Mining Department, Heriot-Watt College, Edinburgh. Paper by Prof. H. Briggs.
11.—GAS COMPANIES PROTECTION ASSOCIATION.—Meeting of the Committee at 5, Victoria Street, S.W. 1, 2.30 p.m.
12.—NATIONAL JOINT INDUSTRIAL COUNCIL.—Executive Committee Meeting, 28 Grosvenor Gardens, S.W. 1, 10.15 a.m.
12.—N.G.C.—Central Executive Board Meeting, 2.30 p.m.
12.—I.G.E.—Finance Sub-Committee, 9.45 a.m.
12.—I.G.E.—Membership Sub-Committee, 10.30 a.m.
12.—I.G.E.—General Purposes Committee, 11.15 a.m.
12.—I.G.E.—Education Executive Committee, 4 p.m.
13.—I.G.E.—Board of Examiners, 10.30 a.m.
14.—MIDLAND ASSOCIATION.—Meeting at Grand Hotel, Birmingham. Presidential Address of Mr. A. Roberts, of Hereford.
15.—SOUTHERN ASSOCIATION (WESTERN DISTRICT).—Commercial Meeting, Rougemont Hotel, Exeter, 2.30 p.m.
15.—LONDON AND SOUTHERN JUNIOR ASSOCIATION.—Meeting and Paper by Dr. F. J. Eaton.
16.—WALES AND MONMOUTHSHIRE JUNIOR ASSOCIATION.—Meeting at Newport. Paper by Mr. H. Canning, Jnr.
16.—WESTERN JUNIOR ASSOCIATION.—Meeting at Bath.
18.—MIDLAND GAS INDUSTRY DINNER AND DANCE, Tony's Ballroom, Birmingham.
20.—MANCHESTER AND DISTRICT JUNIOR ASSOCIATION AND YORKSHIRE JUNIOR ASSOCIATION.—Joint Visit to Sheffield.
20.—B.C.G.A.—Meeting of Executive Committee, 11 a.m.; Special Meeting of General Committee, 2.15 p.m. (not 2.30 p.m., as previously announced).
21.—I.G.E.—Refractory Materials Joint Committee, 2.30 p.m.
22.—MANCHESTER DISTRICT ASSOCIATION. — Annual Luncheon, Midland Hotel, Manchester, 1 p.m., followed by the Annual Meeting, 2.30 p.m.
23.—SCOTTISH JUNIOR ASSOCIATION (WESTERN DISTRICT).—Annual Business Meeting. Paper by Mr. J. L. Crossley.
28.—SOUTHERN ASSOCIATION.—Annual General Meeting, Hotel Metropole, London. Presidential Address of Mr. E. L. Nicholas, of Guildford.
29.—I.G.E.—Joint Lighting Committee, 2.30 p.m.

News in Brief

Property has been Acquired by the Haddington Gas Company for up-to-date showrooms and offices.

Applications are Invited for the position of Chief Engineering Assistant to the Blackpool Corporation Gas Department. The salary attached to the post is £352 per annum, rising to £380 per annum.

Imports of cast-iron gas pipes and fittings into the Irish Free State during last year reached a total of 60,600 cwt. valued at £29,603, as compared with 54,237 cwt. and £26,029 respectively in 1933.

In Order that Liverpool Dairymen may see what can be provided in the way of compact, reliable, and labour-saving gas appliances, a demonstration has been staged in the Industrial Demonstration Room of the Liverpool Gas Company in Grenville Street South.

Institute of Physics.—A Conference on Industrial Physics will be held in Manchester from March 28 to March 30. The subject of the Conference will be "Vacuum Devices in Research and Industry."

Dividends for the year ended Dec. 31, 1934, were paid by the South Shields Gas Company on Feb. 27, at the following rates: 4½% on the consolidated stock, and 2⅞% on the ordinary stock, both less income-tax.

Application is to be Made to the Board of Trade by the Colchester Gas Company for a Special Order to enable the Company to raise additional share capital of an amount not exceeding £20,000, to borrow on mortgage of the Undertaking, and for other purposes.

Building Schemes have necessitated increased expenditure as shown by the annual report of the Alnwick Gas Company, but a good return is rightly anticipated by way of an increased income from the sales of gas, which last year showed an advance of about 50,000 c.ft.

A Lecture was delivered by Dr. Angus, Chief Chemist of the Parkinson Stove Company, Ltd., to the Fittings Staff of the Nelson Gas Department on Feb. 21 at the Nelson Technical School. Mr. G. R. Macfarlane, Engineer and Manager of the Nelson Gas Department, presided.

The First Directors of the Caledonian Gas Corporation, Ltd., whose registration was noted in last week's "JOURNAL," are Mr. R. G. Simpson, C.A., Mr. J. R. Little, J.P., and Mr. Richard K. Law, M.P., who, we understand, are to be joined in due course by technical experts in the Gas Industry.

A Series of Cookery Demonstrations and lectures have been arranged by the Annan Gas Company, Ltd., in their High Street showrooms, from March 4 to 8. Parkinson gas appliances will be on view as well as washing machines. The cookery demonstrator is Miss G. L. Hughes, of the Melbourne College of Domestic Economy.

A Compliment was paid to the Hastings and St. Leonards Gas Company by the *Evening Argus* for March 1, which selected the gas showrooms as an example of how prosperity goes hand-in-hand with publicity. "At the showrooms," the *Evening Argus* says, "persistent publicity and prompt and effective service have meant additional business for the Company."

A Reduction in Purification Costs as a result of the adoption of sulphur recovery at their West Melbourne Works is anticipated by the Metropolitan Gas Company of Melbourne. The spent oxide is treated and sulphur is recovered as ammonium polysulphide which, by co-operation with the Victorian Department of Agriculture, is distributed among the fruit growers who have found it very successful in dealing with red spot and other pests.

An Offer of a Scholarship is made by the Institution of Heating and Ventilating Engineers, the aim of which is to foster the technical education of operatives engaged in the heating and ventilating industry. The value of the Scholarship is five guineas per annum, and it is tenable for three years. Application forms may be obtained from the Secretary of the Institution, 12, Russell Square, London, W.C. 1, and must be returned before March 19.

Co-partnership Conference.—By courtesy of the Mayor of Ipswich, the Industrial Co-partnership Association has arranged a Conference on Co-partnership in Industry on the afternoon of Wednesday, March 13, at the Town Hall, Ipswich. Councillor G. A. Mallett, Mayor of Ipswich and also Secretary of the Ipswich Gas Light Company, will preside at 2.30 p.m., and the speakers will be Mr. Henry Woodall, J.P., M.Inst.C.E., Chairman of the Ipswich Gas Light Company and Deputy-Governor of the Gas Light and Coke Company, Mr. Alan R. Colman, Director of Messrs. J. & J. Colman, Ltd., and Mr. F. G. Clavering Fison, Chairman of Messrs. Fison, Packard, & Prentice, Ltd., who will speak on Co-partnership in the businesses in which they are engaged.

"The King's House"—the Royal Warrant Holders' Association Jubilee gift—is, we learn with much interest, to be fitted with gas fires. Messrs. Bratt Colbran & Co. inform us that they have received definite instructions to supply "Portcullis" fires, some of which will be fixed in the house when it is on view at the forthcoming Ideal Home Exhibition at Olympia. Arrangements for exhibiting the house will not permit of inclusion of all the fireplaces.

The Public Lighting at Kilrenny, East Fife, is to be improved by the installation of up-to-date gas lamps by the Anstruther and Cellardyke Gas Company. The Anstruther Town Council at a recent meeting decided to accept a ten years' contract from the Gas Company for the lighting of the town and neighbouring village. An offer from the Fife Electric Power Company who asked the Council to bear the expense of the electrical equipment was rejected.

Two Members of the Wandsworth and District Gas Company's cookery demonstration staff were successful in winning awards in the domestic sections of the competitions in advanced cookery and confectionery held in connection with the Cookery and Food Exhibition which we referred to in the "JOURNAL" for Feb. 27. Miss E. Webster, M.C.A., was awarded a diploma of merit for bottled vegetables and fruit, and Miss J. McNeil won the bronze medal for Simnel cake. The "Radiation" Challenge Cup for "Artistic Cookery" was awarded to Trust Houses, Ltd.

British Empire Exhibition in South Africa.—We have received from the Federation of British Industries, 21, Tothill Street, S.W. 1, a copy of the preliminary prospectus of the British Empire Exhibition which will be held in Johannesburg late next year. The London Advisory Committee, consisting of members representing the leading commercial and other interests of South Africa, was recently appointed under the Chairmanship of Sir Arthur Balfour, Bart., K.B.E.

The Annual Brighter Homes Exhibition, which opened at the City Hall, Deansgate, Manchester, last Friday has already produced reports of good business. Altogether there are 150 exhibitors, among whom the City of Manchester Gas Department have arranged a full display of gas appliances for lighting, heating, cooking, and hot water. Their stand is one of the most attractive in the Exhibition. Modern Labour Savers, 191, Princess Street, Manchester, stage a display of "Empyre" Gas Washing Machines.

The Industrial Co-partnership Association arranged, by courtesy of the South Suburban Gas Company, a Conference on Co-partnership in Industry to-day at the Company's Showrooms, Dartford. Colonel A. C. Davis, High Sheriff of Kent and Works Managing Director of Associated Portland Cement Manufacturers, Ltd., presided. The principal speaker was Dr. Charles Carpenter, C.B.E., who spoke from his forty years' experience of the successful working of Co-partnership in the Gas Industry.

Approval was Given by the Stoke-on-Trent City Council on Feb. 27 to the agreement with the Stretton Iron, Steel, and Coal Company, Ltd., for the supply of coke oven gas to the Corporation. The alternative proposal to taking the supply of coke oven gas from the Company, in order to meet increased demands, was the extension of the Corporation Gas-Works; and in moving the adoption of the minutes of the Committee the Chairman (Alderman G. H. Barber) expressed his disappointment that that course had not been taken.

Gas Floodlighting in Edinburgh during the Jubilee celebrations was discussed on March 1 at a meeting of the Public Utilities Committee of the Corporation. Councillor Walter Muter, Gas Convener, asked authority to spend about £1,000. They had previously asked for £500, but now they found they would have to buy the floodlighting apparatus. It was agreed, subject to the sanction of the Treasurer's Committee, to approve of the expenditure of £1,000. Donaldson's Hospital and the Royal High School are among the buildings to be floodlighted.

Overseas Representation of the highest quality is a need which has been emphasized by the recent presence in this country of overseas buyers at the B.I.F., and the Institute of British Executives, Swan House, 133, Oxford Street, W. 1, is mobilizing the large number of commercially and technically qualified men, by language and experience, which has been released by displacements caused by the prolongation of the world economic crisis. The Institute will welcome inquiries from Principals who wish to take advantage of the opportunity to develop their overseas trade.

There was Another London Electricity Breakdown on the evening of Saturday, March 2, when a part of the East Ham district was affected by a failure of the current at a local sub-station. Policemen were summoned hastily to the four-road intersections where traffic lights went out, and candles had to be brought into use in many shops filled with customers. Cheers went up when the light came on again at a quarter past seven, but after flickering for a few seconds it went out again, and the lighting was not fully restored until about ten minutes past nine, after having been off for three hours.

Plymouth Price Reduction.—Plymouth City Gas Committee, at a meeting on Thursday, Feb. 28, decided upon a price reduction in the Stonehouse area. From the March quarter readings ordinary consumers will pay 2s. 6d. instead of 2s. 7d. per 1,000 c.ft., while for power purposes the price is to be reduced from 2s. 3d. to 2s. 2d. Where the gas is obtained by means of prepayment meters, 26 c.ft. will be available for a penny instead of 25 c.ft. The Committee estimates that its expenditure for the year 1935-6 will amount to £178,696, and the estimated income to £179,138, leaving a net balance of £442. The capital expenditure is estimated at £5,000.

The Centenary of the Douglas Gas Light Company was celebrated last week by an exhibition in the Palais de Danse, Strand Street. A hundred years of progress, service, development, and economy were illustrated by the exhibition of appliances. On Aug. 14, 1835, an Act was passed for lighting the town of Douglas with gas. The Company was then formed, and has functioned successfully ever since. Closely associated with the history of the Company is the name of the present Chairman, Mr. C. H. Kay, J.P., "the father of the Company," who, during the past 60 years, has risen from the office stool to his present position. In 1925, the Douglas Undertaking had 5,601 consumers; now it has 7,105. Over 43 miles of mains are in use, the largest of which is 20 in. in diameter. The annual output of gas in Douglas has risen to 208 million c.ft.

British Chemical Plant Exhibition, 1936.—The British Chemical Plant Manufacturers' Association, 166, Piccadilly, London, W. 1, have informed us that a letter has been sent to all chemical plant manufacturers with which the Association have been acquainted, drawing attention to the intention of the Association to organize a British Chemical Plant Exhibition in conjunction with the Chemical Engineering Congress which is to be held in June, 1936. The Association is in a position at present to indicate broadly the proposals for the exhibition and by circularizing potential exhibitors is seeking to build up a mailing list for use when the detailed prospectus of the exhibition is ready for distribution. Any of our readers who are interested as potential exhibitors should communicate immediately with the Association at the above address, asking for a copy of their letter G.2,716, assuming, of course, that they have not already received a copy of that letter.

Glasgow and Coke Oven Gas.—Sir Arthur Rose, the Commissioner for the Distressed Areas in Scotland, has recently suggested the formation of a gas grid in Scotland. It is presumed that part of the supply for this grid will come from coke ovens, and this move has resulted in the Glasgow Corporation Gas Committee being asked to reconsider the decision with regard to coke oven gas. The request did not come from Messrs. Baird or Messrs. Nimmo, who have both offered the Corporation supplies of coke oven gas, but was in the form of a letter sent by Bailie James Gray to members of the Committee. The letter urged that the question of the purchase of coke oven gas be reconsidered and the suggestion was made that Glasgow should give a lead in the use of cheap coke oven gas. The matter of appointing a Sub-Committee to reconsider the position was discussed by the Gas Committee, and on the casting vote of the Sub-Convener, Bailie Donald McIntosh, it was decided to take no further action.

Ayr Gas Company Re-organized

The Ayr Gas Company has been re-organized, since the original Articles of Association of the Ayr Gas Company have been found restrictive. With the passing of time, they have become somewhat out-of-date, and it was considered desirable that the Company should be re-organized.

The old Company, accordingly, went into voluntary liquidation, and the new Company was registered with a capital of £80,000 in £1 shares. There is no change in the Board of Directors, and consequently, no more than a technical break in the continuity of the Company. Under the new Memorandum and Articles of Association there has been a re-valuation of the assets, and the denomination of the shares has been altered from £5 to £1.

Chemical Engineering Congress

World Power Conference

The Technical Programme has been issued of the forthcoming Chemical Engineering Congress of the World Power Conference, which is to be held at the Central Hall, Westminster, from June 22-27, 1936. The Chairman of the Organizing Committee is Sir David Milne-Watson, and the Vice-Chairman Dr. E. W. Smith.

One section of the programme is concerned with Fuel, Heat, and General Problems in Chemical Engineering, among the subjects to be dealt with being carbonization, selection and application of fuel and power, treatment of gases, hydrogenation, and disposal of effluents.

The Offices of the Congress are at 56, Victoria Street, and the General Secretary is Mr. M. W. Burt.

Zulus Find a Warm Spot

This amusing incident was snapped at the *Rand Daily Mail* Ideal Homes Exhibition, when Zulus in the "Ideal Kraal" were conducted through the Hall of Transport housing the exhibits. There was a cold snap on at the time, and the Zulus evidently appreciated the warmth of the Radiation gas fire displayed on the Municipality's stand.

Gas Heating for Hospitals

Useful Display at British Industries House

In connection with the proposed rebuilding of Westminster Hospital, a very fine display has been set up at British Industries House, Oxford Street, with a view to demonstrating all that is latest and best in the way of hospital design and equipment.

Every section of a modern hospital is represented in full scale down to the smallest details of equipment and fittings, and each department is completely furnished on the most up-to-date lines. In view of the fact, therefore, that hospital authorities from all parts of the country are expected to visit this display, it is gratifying to find that gas plays some part in the general scheme—though not, perhaps, so large a part as might be expected of so clean and reliable a fuel for this purpose.

The chief features of interest to the Industry are the two-unit models of built-in "Portcullis" gas fires in attractive settings in a typical nurse's room, a sister's bed-sitting-room, and a senior sister's bedroom. The fire in the last-named room is fitted in a hinged panel, which on being swung back reveals the ingenious system of flue equipment. Each floor has its separate flue pipe painted in a distinguishing colour, so that a fault in equipment of any particular floor can be easily traced and rectified. These three "Portcullis" models are in different coloured finishes to harmonize with the decoration schemes of the various rooms, and the fires form most pleasing settings, which should redound to the credit of the Gas Industry.

Above each gas fire is a neat little mirror-fronted cupboard containing a small slot meter, which solves in a practical manner the problem of concealing the meter in such a way that it is at the same time easily accessible.

So far as gas equipment in other departments of the model hospital is concerned, while there would seem to be many potential applications in the direction of water heating, instrument sterilizing, cooking, ward heating, and so forth, apparently the only other appliance is a gas-operated refrigerator in one of the kitchens. However, there is still

perhaps, opportunity for the installation of further apparatus to demonstrate the valuable part gas can play in this important direction, for the testimony of many medical authorities as to the suitability of gas is well-known.

Correlation of Hydrometer Scales

The Committee of the Chemical Engineering Group of the Society of Chemical Industry has just issued its tenth Data Sheet, which deals with the Correlation of Hydrometer Scales. The Sheet has been prepared for the Chemical Engineering Group by Mr. W. Preston, under the direction of a special committee, consisting of Mr. J. Arthur Reavell (Convener) and Messrs. E. A. Alliott and H. W. Cromer. Copies are available at Abbey House, Victoria Street, London, S.W. 1, at the price of 2s. 6d. in paper covers and 3s. 6d. bound in limp cloth.

Assessing Gas-Making Results

A correction should be made in Dr. Pexton's Paper on p. 374 of the "JOURNAL" for Feb. 13.

Referring to Experiment B and Experiment C (Table 2, p. 373) the author gives the tar figures of 5·6 in Experiment B and 9·2 in Experiment C, which correspond to gallons, not therms. These figures should be substituted by 10·7 and 17·7 respectively, and in place of the saving of 3·5d. the saving should now be 7·7d.

The correct lines should read:

Experiment B (with tar overcracked)

$$81{\cdot}7 \times 2\text{d.} + 10{\cdot}7 \times 1{\cdot}25\text{d.} = 176{\cdot}8\text{d.}$$

Experiment C (with almost optimum conditions of cracking)

$$81{\cdot}2 \times 2\text{d.} + 17{\cdot}7 \times 1{\cdot}25\text{d.} = 184{\cdot}5\text{d.}$$

This saving of 7·7d. per ton of coal does not represent . . . &c.

Brighton Gas for Littlehampton

Systems Linked Up

It will be remembered that the Brighton Hove and Worthing Gas Company acquired the Undertaking of the Littlehampton Gas Company, by Special Order of the Board of Trade, as recently as July 31 of last year.

In intelligent anticipation of the Order, and by arrangement with the Littlehampton Company, a reduction in price of 2d. per therm was made as from the Midsummer meter readings, thus securing to the consumers in that area a saving of nearly £4,000 annually in their gas bills.

In order to take advantage of the economy of large scale manufacture, it was decided to follow the practice employed on the acquisition by the Company, in 1931, of the Worthing Gas Light and Coke Company, and close down the local works as a manufacturing station. A feeder main has therefore been laid from the Worthing distributing station to the Littlehampton gasholders at Rustington and Littlehampton, to carry gas from Portslade Works to the new area.

This work has now been completed, and beyond certain alterations at the Worthing distributing station, the scheme involved a mainlaying task of some importance.

The Contractors for the work were Messrs. Wm. Press & Son, of London, who, despite the very bad weather conditions experienced in the last three months of 1934, carried the job through in 20 weeks, by 5 gangs, embodying some 220 men, of whom approximately 75% were local labour.

Socket and spigot cast-iron pipes in 4-yard lengths, vertically pit cast, to B.S.S., Class B, were used, being supplied by the Stanton Ironworks and Staveley Coal and Iron Company, in equal proportions.

The joints were of the open lead type, and the whole length was tested by sections to a pressure of 30 lbs. per sq. in. Following are brief particulars of the work:

Total length of main	9·7 miles
Length of 16-in. diameter main	12,134 yards
Length of 12-in. diameter main	4,859 ,,
Total weight of pipes and specials	2,388 tons
Number of joints	4,508

On Saturday, Feb. 23, the "Through Supply" was inaugurated at the Littlehampton Works by Colonel C. C. R. Murphy, J.P., Chairman of the Urban District Council, on the invitation of the Chairman and Directors of the Company, and in the presence of Council Officials and other guests, who were afterwards entertained by the Directors at luncheon at the Beach Hotel, Littlehampton. Mr. A. M. Paddon, M.Inst.C.E., Chairman of Directors, presided, and was supported by several of his co-Directors.

Turn on the Tap

We have long emphasized the desirability of adding still further to the convenience of gas by making gas appliances self-igniting. A turn of the tap which automatically lights the gas at the burner is a very strong selling point, and we are glad that this fact is being more generally appreciated. The popular "Portcullis" series of fires marketed by Bratt Colbran & Co. will become still more popular now that the firm have introduced an ingenious automatic ignition tap. Appearance counts for a great deal these days, and not the least important virtue of Bratt Colbran's device is that nothing but the tap is to be seen by the consumer.

The principle of the device—the spark of flint on steel—can hardly be described as new, but the application of the principle in this particular automatic lighter is decidedly interesting. The lighter, which, hidden away, is an integral part of the tap, is not designed to become a museum piece. Certainly the makers have studied the points of reliability in use and ease of fitting.

Unknown, of course, to the consumer, a turn of the tap in this case means a great deal. It means the admission of gas to a pilot adjacent to the flint, a spark which ignites this pilot, which in turn ignites the gas from a second pilot, the flame from which ignites the gas from the fire burner. This accomplished, the pilot lights extinguish. This description may give the impression of a series of jerky actions. In practice, however, so good are the timing and the provisions for proportioned gas flow, that the operation of turning on the tap results in smooth and certain lighting of the fire.

The device, mounted on the common spindle which controls the gas supply, is of neat and compact construction. A point which appeals to us is the care taken to guard against any corrosion by cadmium plating the parts—rotating cams, one of which is spring loaded—likely to be affected. As for maintenance, renewal of the flint is the simplest matter possible, and the necessity for such renewal should be very infrequent.

Staff Lecture at Watford

In a recent lecture to the staff of the Watford and St. Albans Gas Company, Mr. Kelsey, of Messrs. Falk, Stadelmann, & Co., Ltd., said that ventilation and heating are twins that cannot be happily separated. Proper and adequate ventilation is given more heed and attention by all classes to-day than a generation ago, but inherently the human species has a greater liking for heat than ventilation. Much the same may be said with regard to the equally twin functions of exercise and heating. There is no denying that the one is a greater favourite than the other. However, it is a hopeful sign of the times that on the whole the nation, and the world, too, are ordering their lives with more balance and control of the numerous attributes and functions of life.

He had the benefit of an interesting conversation recently between two eminent Professors of the medical world. The discussion included the question of heat—particularly gas fires. The final remark was illuminating. One of the Professors said: "What we want is more open windows and bigger Gas Fires!" No doubt they would all like bigger gas fires—they would certainly like gas consumers to demand bigger fires, but would they be ready to pay the bigger bills? The Professor's call for more open windows would, he feared, still fall on many deaf ears. However, expert investigators stated that more than five changes of air per hour in an ordinary sized room makes for discomfort.

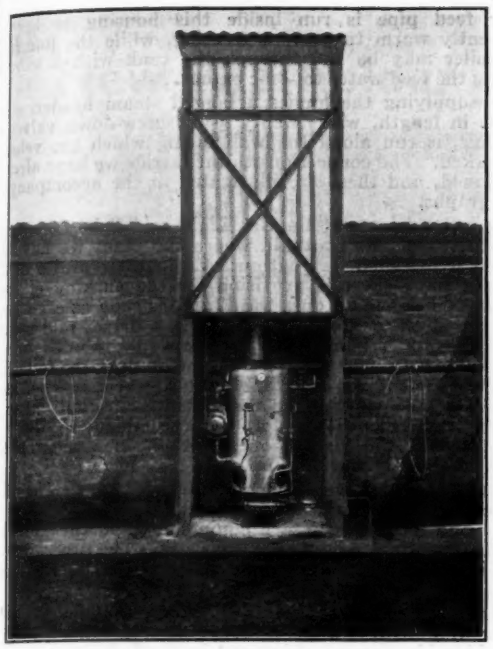
Metropolitan and Suburban Companies' Results in 1934

A comparative statement of working results and revenue account costs per therm sold.

Compiled by Mr. F. J. Bradfield, General Manager and Secretary of the Commercial Gas Company

	Gas Light	So. Metrop.	Commercial	S. Suburban	Wandsworth	Tottenham	Croydon	Lea Bridge	Hornsey
Declared Calorific Value ... ... (B.Th.U.)	500	560	500	560	500	500	500	500	500
Gas Sold on Declared Calorific Value ... (therms)	250,368,211	83,249,165*e*	16,386,645	24,870,696	28,194,639	19,725,565	15,254,982	5,254,685	3,760,046
Increase ... ... (per cent.)	·09 *a*	*Dec.* 2·31 *f*	*Dec.* 2·77	3·31	2·53	3·35	2·29	2·42	*Dec.* 3·42
Gas made per ton Coal on Works Tests (therms)	76·02 *b*	75·48	71·52	75·91	72·68	76·46	74·52	80·19	68·47
,, unaccounted for ... ... (per cent.)	4·37	—	3·03	6·14	4·92	5·20	6·85	2·77	2·04
Coke made for Sale per ton Coal ... ...(cwts.)	9·92	9·42	10·39	9·60	9·39	9·46	10·13	10·41	10·92
Tar made per ton Coal ... ...(galls.)	10·39	10·65	9·83	10·10	9·82	11·92	12·58	15·86	11·95
Liquor made per ton Coal ... (galls.—8 oz.)	29·51	40·98	37·91	31·58	24·69	29·28	36·36	39·83	38·24
Percentage of Coke used as Fuel	19·99	20·71	20·05	25·98	23·96	22·62	20·45	21·35	16·00
CAPITAL EXPENDED (less nominal additions) per therm sold	s. d. 2 0·28	s. d. 1 8·63 *g*	s. d. 1 11·35	s. d. 2 5·82	s. d. 2 5·96	s. d. 1 10·12 *k*	s. d. 2 5·92	s. d. 1 10·38	s. d. 1 11·70
CAPITAL EMPLOYED per therm sold	3 4·62	2 4·86 *g*	3 5·12	3 0·80	3 0·01	2 3·10 *k*	2 10·30	1 11·76	2 6·80
Price of gas per therm in principal area ... ... { L'day, Mid.	d. d. 8¾ 8¾	d. d. 8¾ 8¾	d. d. 9 9	d. d. 9¼ 9¼	d. d. 8 8	d. d. 8¾ 8¾	d. d. 9 9	d. d. 8¾ 8¾	d. d. 8 8
... Michs, Xmas	8¾ 8¾	8¾ 8¾	9 9	9½ 9½	8 8	8¾ 8¾	9 9	8¾ 8¾	8 8
COSTS PER THERM SOLD.									
Revenue Accounts.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Coals, Oil, etc.	3·13	3·12	3·64	4·09	3·66	4·04	3·79	3·87	4·69
Less Residuals :—Coke and Breeze	1·46	1·52	2·02	1·72	1·65	1·60	1·69	1·43	2·09
Tar	·43	·44	·59	·37	·41	·54	·53	·47	·53
Amm. Liq. and S. of Amm.	·00	·04	·09	·00	*Dr.* ·02	*Dr.* ·01	·00	·01	·02
TOTAL RESIDUALS ...	1·89	2·00	2·70	2·09	2·04	2·13	2·22	1·91	2·64
Net for Coals, Oil, etc. ...	1·24	1·12	·94	2·00	1·61	1·91	1·57	1·96	2·05
MANUFACTURE—									
Salaries	·14	·24	·24	·18	·16	·19	·19	·09	·15
Wages—Carbonizing	·31	·54	·65	·46	·54	·44	·28	·43	·49
Purification	·06	·16	·14	·09	·10	·09	·05	·04	·11
Repairs : Plant	·91	1·39	1·10	·87	1·54	1·62	1·20	1·36	1·23
Net Manufacture ...	2·66	3·45	3·07	3·60	3·95	4·25	3·29	3·88	4·03
DISTRIBUTION—									
Wages and Salaries	·70	·37	·37	·83	·49	·35	·55	·12	·31
Repairs—Mains and Services, etc.	1·08	·72	·60	·84	·63	1·52	1·06	·64	·60
,, Meters and Prep. Meters and Fittings	·47	·84	·96	1·04	·92	·54	·41	·44	·42
,, Stoves—Ordinary and Prep.	·99	·79	1·14	1·00	·54	·57	·76	1·01	·33
TOTAL—Net Manufacture and Distribution ...	5·90	6·17	6·14	7·31	6·53	7·23	6·07	6·09	5·69
Rents, Rates and Taxes	·74	·37	·51	·13	·24	·39	·65	·69	·28
MANAGEMENT—									
Directors, Auditors, and Salaries (Secretary, etc.)	·10	·15	·21	·20	·19	·16	·21	·22	·38
Collectors	·21	·17	·26	·12	·10	·21	·26	·15	·08
Stationery and General Charges	·14	·20	·23	·17	·21	·19	·28	·26	·28
Copartnership	·11	·15	·13	·15	·23	·18	·21	·14	·15
Bad Debts	·02	·01	·01	·02	·02	·01	·03	·01	·02
Law and Parliamentary Charges	·00	·01	·00	·01	·01	·00	·00	·03	·00
Superannuations, Pension Funds, etc.	·21	·23	·29	·40	·25	·18	·38	·14 *l*	·52
National Insurance	·07	·27 *h*	·08	·08	·08	·09	·05	·06	·07
Sundries	·01	·01	·01	—	·01	—	·00	—	—
TOTAL EXPENDITURE (*less* Residuals)	7·51 *c*	7·74	7·87	8·59	7·87 *j*	8·64	8·14	7·79 *l*	7·45
Gas (less Public Lighting Expenses)	7·87	8·07	8·22	8·90	8·14	8·39	8·86	7·97	7·89
Rentals—Meter and Prep. Meter and Fittings...	·87	·70	·68	·70	1·04	·53	·58	·44	·53
Stove	·66	·52	·62	·84	·67	1·27	·76	·91	·80
Inc. Mantle Maintenance	—	—	·01	—	—	—	—	—	—
Miscellaneous	·05	·02	·02	·01	·04	·03	·24	·00	·04
TOTAL—Gas, Rentals, etc.	9·45	9·31	9·55	10·45	9·89	10·22	10·44	9·32	8·96
Balance being Profit	1·94	1·57	1·68	1·86	2·02	1·58	2·30	1·53	1·51
Dividend and Interest	1·93	1·57	1·98	1·82	2·01	1·52	2·14	1·45	1·50
Surplus or Deficit	·01	·00	*Def.* ·30	·04	·01	·06	·16	·08	·01
Contributions to Funds and Sundry Payments ...	·02 *d*	—	—	·02	*Cr.* ·01	·06	·13	·91	·00
Sundries.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Coals cost per ton	19 10·04	19 4·37	20 3·90	23 2·26	21 4·77	25 2·02	24 8·00	27 0·35	26 11·00
Coke realised per ton Coal	9 7·73	9 3·60	10 11·55	10 9·34	9 10·92	9 10·99	11 10·02	—	13 11·28
Coke ,, ,, Coke	19 5·31	20 3·74	21 8·24	22 6·24	21 1·41	20 11·46	23 4·36	} 23 3·69 {	25 6·33
Breeze ,, per ton	4 8·05	1 10·29	5 3·52	3·87	6 7·39	5 8·59	6 4·76		—
Tar ,, per gall.	3·45	3·10	4·04	2·76	2·59	3·59	3·50	2·80	3·41
Amm. Liquor, etc., realised per butt (8 oz.) ...	0·57	6·60	1 5·60	0·27	*Dr.* 5·05	*Dr.* 4·05	0·56	1·99	4·22
Percentage of Stoves at Rental to Consumers	96	109	97	93	65	75	71	61	33
Bad Debts per cent. on Total Receipts ...	·17	·12	·09	·16	·22	·05	·21	·08	·18
Net Profit per cent. on Ordinary Capital ...	5·68	5·75	4·33	6·28	7·08 *j*	7·22	8·24	9·20	6·27
One-fifth Penny variation equals Gross ...	£195,124 *a*	£84,067 *i*	£16,721 *i*	£25,092 *i*	£21,599 *a*	£16,438	£12,406 *a*	£4,379	£3,133
Water Gas per cent. on Total Make of cubic feet ...	16·16	—	—	—	12·62	17·58	27·59	25·47	26·25

a—On Gas charged to Consumers.
b—Before Benzol extraction.
c—Excluding Leigh Loans (Repaid).
d—Less Grant from Treasury.
e—Including Sales to South Suburban.
f—Excluding Sales to South Suburban.
g—Eliminating purchase of South Suburban and Commercial Stocks.
h—Including Copartnership Insurance Fund.
i—One farthing variation on gas charged.
j—Excluding Capital Duty.
k—Including Investments in other Gas Companies.
l—Excluding Special Contribution to Pension Fund ·91d.



The Gas-Heated Steam Boiler, with Water Tank Above.

Gas for Steam Heating of Lorry Engines

Firms whose business involves the regular operation of heavy motor lorries will welcome the introduction of a novel plant recently developed by the Gas Light and Coke Company's Industrial Centre, in conjunction with the Company's Transport Department and Motor Repair Shops, for keeping lorry engines warm overnight.

The amount of time and effort expended in getting a fleet of heavy lorries under way on a cold winter's morning has to be experienced to be realized; but we know that not a few drivers will bear us out in this respect. It is no exaggeration to state that, having filled up the radiator of one lorry with hot water, and several men having "swung" upon the starting handle for some minutes before the engine can be coaxed into life, it is necessary to warm up for perhaps a quarter of an hour. After this the second vehicle is hitched on behind and towed round the yard until it, in turn, will start—and so on throughout the whole fleet of cars. It will thus be readily appreciated that such an installation as this which we were enabled, through the courtesy of the Gas Light and Coke Company, to inspect the other day should find a ready market in all parts of the country.

The application of the plant is not, of course, confined to commercial vehicles; for with the rapidly increasing popularity of road passenger transport between important centres, not to mention ordinary motor 'bus services, and the paramount importance of quick starting for fire engines, ambulances, &c., it will be seen that there is a vast field to cover. In addition, it should be appreciated that the installation of the plant provides not only a winter load, for the starting up of heavy motor engines is by no means a simple task even in the height of summer. Its potentialities in the direction of private car heating also should not be overlooked.

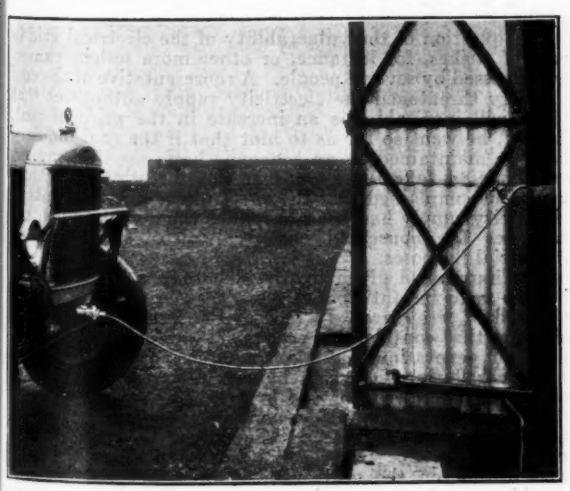
The installation, as we have stated, is designed to keep the engines of motor lorries warm when standing in garages or open spaces overnight, thereby effecting easy starting and a consequent material economy to the purchaser.

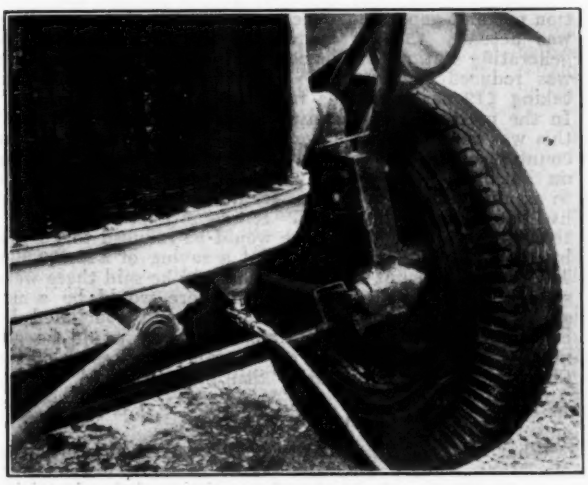
The heat is applied by carrying a small steam supply from a gas-heated boiler into the bottom of the vehicle's radiator, and blowing in steam continuously, which assists the normal thermo-syphon effect. An ordinary gas plug connector is used to couple up the supply pipe of flexible tubing direct to the female fitting on the radiator. The system is thus perfectly foolproof, since there are no joints to make when connecting up, while, in addition, it forms a complete safeguard against the vehicle being driven off with no water in the radiator, as not infrequently occurs when the water was previously emptied out on cold nights.

Entirely Automatic.

The plant is entirely automatic in operation, requiring no supervision, and the water in the radiator may be heated to any desired temperature and the whole of the cylinder block consequently kept warm. Moreover, the heat is transmitted down to the bottom of the crankcase, thus preventing the oil in the sump from becoming thick and heavy—a common cause of difficult starting.

Apart from the ease of starting brought about by the installation of this system, there are several supplementary advantages to be gained by starting up with an already warmed engine. These include the fact that the engine will never run dead cold, with the consequent imperfectly





Showing the Connections from Steam Supply to Lorry.

vaporized fuel and cylinder wear due to imperfect lubrication, while erosion from condensed acids from combustion will be considerably reduced. Furthermore, after a few nights' operation the water in the water jacket and radiator automatically becomes replaced by distilled water formed by condensation of the steam, with a resulting reduction in scale formation in the cylinder block. The surplus condensate escapes through the radiator overflow and may be pumped back to the boiler.

This direct method of heating the radiator has many advantages over the central heating of the garage and other forms of individual engine heating. For example, a much higher water temperature is obtainable, and 130° F. has been found most suitable for the particular installation we inspected, which, it is interesting to note, is carried out entirely in the open. The heating, however, can be carried out in any garage, no matter how light, and the steam consumption per lorry to maintain 130° F. with an air temperature of 35° F. has been found to be 4 lbs. per hour. At this rating, 16 lorries can be adequately heated with a gas consumption of only one therm per hour, so that it can hardly be described as an expensive system to operate.

Incidentally, the same system can be used to supply the distilled water necessary for the vehicles' batteries.

The Boiler Plant.

The boiler plant consists of a lagged steam boiler with an evaporation of 70 lbs. per hour at 212° F., fitted with an automatic steam-pressure-operated gas control which is set at 2½ lbs. per sq. in., complete with ball valve type water feed. A 100-gallon cold water feed tank is erected at a height of approximately 12 ft. from the ground, and the whole is surrounded by an asbestos housing. The cold water feed pipe is run inside this housing to keep it sufficiently warm to prevent freezing, while the flue from the boiler may be run through the tank with a view to heating the feed water to some extent.

For supplying the lorries a lagged steam header, some 200 ft. in length, with twenty ½-in. screw-down valves at intervals, is run along the wall facing which the vehicles are parked. The connections to the lorries we have already mentioned, and these are illustrated in the accompanying photographs.

The lorry drivers at the Gas Light and Coke Company's transport depôt at Southall, where the plant we have described is installed, are enthusiastic in their praise of the new system. There is provision for the parking of some sixteen vehicles in an open yard, and as soon as each lorry comes in at the end of its day's work, a driver told us, the steam injector is immediately plugged in at the bottom of the radiator. When the drivers come on duty the following morning, the engines are still almost as warm as when they left them—and starting up consequently presents none of its previous difficulties. Moreover, he added, the lorry is ready to take the road at once, with no necessity for the delay involved in warming up.

Arrangements have been made for the Carrier-Ross Engineering Company, of 101, Regent Street, W.1, to supply and fix the necessary equipment, and this firm are now in a position to quote for this work. The process, however, is not patented and could be entrusted to any competent firm of heating engineers.

This plant provides an entirely new outlet for gas over a very wide field, and has already, we understand, created a considerable amount of interest in the Industry.

The Cost of the Electricity Grid

There was a lively discussion at an Informal Meeting of the Institute of Fuel—which was held at British Industries House Club, London, on Friday, March 1—on the question "Is the expenditure on the Electrical Grid likely to be justified?" The attendance was the largest of any of the highly interesting informal meetings which have now become a feature of the programme of the Institute of Fuel, and it was notable that a large number of leading men in the Gas Industry were present. The Chair was taken by Sir Alexander Walker, K.B.E., who in addition to having been Chairman of the Area Gas Committee, which recommended the Sheffield Gas Grid, has also been intimately associated with the supply of electricity in Ayrshire.

Mr. Harold Hobson (General Manager, Central Electricity Board) opened the debate and gave a large number of figures which he claimed are already justifying the expenditure on the electrical grid and will still more completely justify this expenditure at the end of the ten-year period for which the Central Electricity Board has budgetted. At the same time he confessed that the present is too early a stage at which to be able to draw any definite conclusions owing to the fact that the Central Electricity Board has only been trading in two areas since the beginning of 1923, in four areas since the beginning of 1934, and in one area since January, 1935. Nevertheless, the estimates upon which the operations of the Central Board are based contemplate considerable economies both in the amount of spare plant necessary and in the coal consumption per unit generated. He pointed out that in 1931 there was actually 45% of spare plant in the many public generating stations in this country, and assuming that this was reduced to only 25% in the ten-years period, and taking £12 per KW., this represented £18,000,000 saving. In the matter of coal consumption, he said that in 1924 this was roughly 2½ lbs. per unit as the average over the country, but by 1932 it had fallen to 1¾ lbs., and arguing on that basis for the period to 1944 he said it was reasonable to assume a figure of 1·3 lbs. per unit generated if the grid had not come into operation. It was anticipated, however, that with the Grid this figure would be reduced to 1·1 lbs. by 1944 and this would represent a saving of £12,000,000. Taking into account the cost of the grid he said there were signs that for the 10-year period there would be a net saving of something over £11,000,000 and concluded by claiming that in 20 years' time everybody would be admitting that the grid, like a very famous ancestor of the Chairman that evening, was "Still going strong."

The Opposition

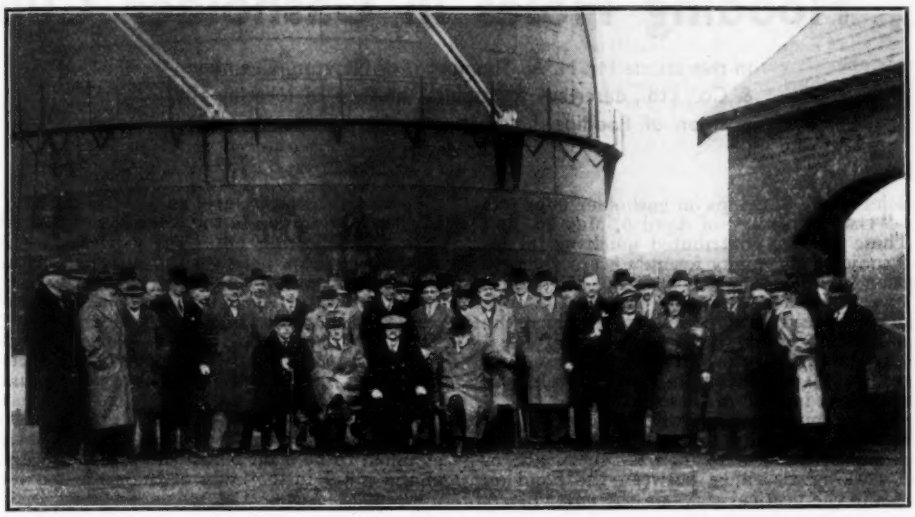
What was frankly stated to be the case in opposition to Mr. Hobson was put by Mr. W. A. Tookey. For his purpose, Mr. Tookey dealt with the statistics of the electricity supply industry since the appointment of the Electricity Commissioners and showed that, despite large increases in the sales of electricity, distribution costs have only been reduced by 1/100th of a penny per unit and management costs by 1/1,000th of a penny. On the other hand, it was shown that the working expenses had fallen quite a considerable amount, but it was claimed that this was mainly due to the fall in price of coal from 35s. per ton to 15s. per ton. At the same time it was shown that the average charges for electricity have fallen quite considerably, but Mr. Tookey contended that as all this had taken place by co-ordination within the supply industry practically before the grid scheme had come into operation, and as figures of generation costs had now reached a very low amount, it would be extremely interesting to see how the grid expenditure was likely to be justified in the future. Incidentally, he contended that domestic users were being charged relatively high prices at the present time for the benefit of the power users.

The discussion was carried on mainly by those who may be regarded as being indirectly concerned. There was, however, one reference to the Gas Industry by a speaker who was somewhat caustic in his comments concerning the many breakdowns in the grid supply system of the country which have been taking place recently and particular reference was made to what was described as the very inadequate explanations given by the Central Electricity Board for these breakdowns. The statements by the Board, it was pointed out, practically took the form of saying that it was not known how the breakdowns occurred but it was always promised that they would not occur again.

The question of the vulnerability of the electrical grid in case of strikes, for instance, or other more serious causes, was stressed by several people. A representative of the coal industry threatened the electricity supply authorities that there will inevitably be an increase in the price of coal. Indeed, he went so far as to hint that if the coal industry is to be maintained on an economic basis the Government will have to take some steps in this direction. Furthermore, he complained that the effect of the developments in electricity supply had been to reduce the demand upon the collieries for household coal and also coal for small industrial purposes.

The impression given by the debate was that no great benefit is to be anticipated from the electrical grid until the end of ten years. In face of the figures put forward showing that considerable economies were being effected in costs of generation and also reductions in prices to the consumer during the years immediately prior to the first restricted operations of the grid scheme, the reasonable doubt exists in the minds of many people as to whether the results which we shall see at the end of the first ten-year period would not have been achieved without the huge expenditure on the grid system, which one speaker said would never have come into existence if it had not been made a political stunt.

New Gasholder Inaugurated at Ludlow



At the inauguration of the new holder, seated, left to right: Sir Henry P. Maybury (Director, Ludlow Union Gas Company), Mr. S. G. Wood (Chairman, Ludlow Company), Alderman T. J. Bryan (Mayor of Ludlow), Mr. H. W. Green (late Chairman, Ludlow Company).

A large and distinguished gathering representing the Gas Industry over a wide area met at Ludlow last Friday for the inauguration of the new gasholder recently built at the Temeside Works of the Ludlow Union Gas Company, Ltd. (one of the Severn Valley Gas Corporation group).

The Directors' invitation to meet at the Works was very extensively accepted. The principal guests were the Mayor of Ludlow (Alderman T. J. Bryan) and Sir Henry Maybury, G.B.E., K.C.M.G., M.Inst.C.E., a Director, who has many close associations with Ludlow and the district.

The arrangements for the inaugural ceremony were very ably made by Mr. J. H. Paterson, Manager of the Ludlow Gas-Works, who welcomed the visitors.

The Mayor remarked that the Company had found some difficulty in keeping the town supplied with gas on account of scarcity of holder accommodation. After some discussion they decided to have a new holder as a benefit to the Company and the town.

Sir Henry Maybury remarked that this was indeed an event in the history of the Ludlow Union Gas Company.

Proceeding he gave interesting technical details of the new holder. He said that its capacity was about 120,000 c.ft., whereas the two other holders combined only gave accommodation for 85,000 c.ft., so that the new holder was 35,000 c.ft. larger than the two they originally relied upon. The height of the tank and holder was 70 ft., and the diameter 48 ft. Having spoken of the excellent manner in which the work had been carried out by the Contractors. Messrs. Firth Blakeley, Sons, & Co., Sir Henry concluded by saying that he was glad to take part in that inauguration ceremony and would congratulate Mr. Paterson, Mr. Blakeley, and those associated with them in having given them such a fine engineering job.

Mr. Blakeley thanked Sir Henry Maybury for his references to the firm, after which the Mayor formally inaugurated the new holder.

Mr. A. Roberts, of Hereford, in proposing a vote of thanks to the Mayor and Sir Henry Maybury, congratulated the Ludlow Company on the ceremony which they had witnessed.

Inaugural Luncheon.

Mr. H. W. Green, the former Chairman of the Company, presided at the luncheon which followed the inauguration of the new holder.

Proposing the toast of "The Directors," Sir Henry Maybury said it was under the chairmanship of Mr. Green that it was decided to construct the holder, and the new Board gladly endorsed their finding. Sir Henry proceeded to mention that the firm were now erecting a much larger holder at Shrewsbury and said that their technical experience was a great credit and a great advantage to the Industry which they served.

Mr. Blakeley, in reply, expressed appreciation of the congratulations he had received that morning. He said there was perhaps one aspect in engineering work which was apt to be overlooked. However accurate and efficient their drawing office staff might be, however efficient their works staff might be, a great deal depended on the erectors. He could not miss the opportunity of expressing appreciation of the active and willing co-operation of Mr. Paterson. His assistance had been a great factor in carrying on the work in a smooth manner and he was sure the ability he possessed would be to the benefit of the Ludlow Gas Company. Expressing the hope that the Ludlow Company, partners in the Severn Gas Corporation, would flourish, he said it was the first time he had done any work for either, and as a memento of the occasion he presented to the Chairman, Mr. S. G. Wood, a handsome silver rose bowl.

Mr. H. W. Green proposed the toast of the Ludlow Union Gas Company, in reply to which, Mr. S. G. Wood paid tribute to Mr. Green as Chairman of the Company for many years, and went on to make an interesting announcement. He said that the new gasholder would make for more economical working and a better service to consumers. As a result of the economies effected, he had pleasure in announcing that the Board of Directors at their meeting that morning decided to reduce the price of gas from March 31 next. He also mentioned that the Directors of the Severn Valley Gas Corporation had decided to place an order with the same firm for a holder for the Cheltenham Company.

Submitting the toast of "The Severn Valley Gas Corporation, Ltd.," Mr. J. H. Paterson said that a great deal of the success of the electrical industry had been brought about by co-operative resource. He could assure the old Board that it was one of the wisest moves they ever made in merging with the Severn Valley Gas Corporation.

Replying, Mr. G. M. Gill (a Director of the Severn Valley Corporation) apologized for the absence of their Chairman (Major Julian Day) and went on to say that the holder which had just been completed at Ludlow was an excellent structure and far from detracted from its beautiful surroundings. The Severn Valley Gas Company was closely concerned with the grouping policy as that was the best thing to-day, having regard to the competition with which they were faced. The best course the Gas Industry could take was to get together and by organization to place themselves in a better position to compete with the electrical industry. They had gone far enough now to see that their hopes were realized and a great number of advantages were accruing from that combination. They felt that it would lead to better service and cheaper prices. In conclusion, Mr. Gill said what the Severn Valley Gas Company wanted more than anything else was happiness for their officers, staffs, and workmen, realizing that the progress of their Industry would be hindered if that did not exist.

A METHOD OF LOCATING Flooding Holes in Gasholder Cups

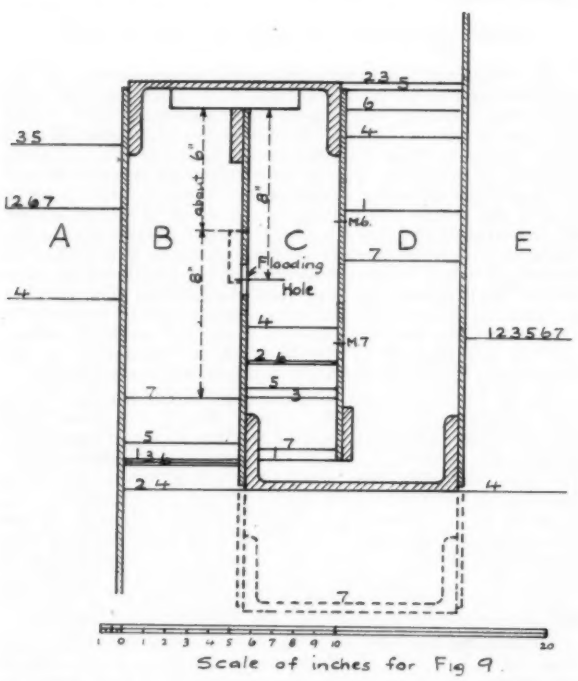
by M. A. THOMPSON

In this article Mr. M. A. Thompson, of Newton, Chambers, & Co., Ltd., describes a graphical method of locating the position of flooding holes in the cups of spirally-guided gasholders.

A series of articles by F. S. Cripps on gasholder cups was published in the "GAS JOURNAL" of April 5, May 10, and Aug. 9, 1910. These articles contributed much useful information on the subject, and many formulæ were given to enable the position of flooding holes to be calculated. These formulæ have reference, however, only to the cups of the older type of guide-framed gasholder, in which the spaces B, C, and D, fig. 9, were invariably made of equal width, thus greatly simplifying the formulæ, as during the processes of cupping and uncupping the water levels rose and fell an equal amount in each of these spaces.

With the advent of spiral-guided gasholders it became necessary to increase the width of space D to allow for the spiral rail on the inner lift, also to increase the width of space B to give working clearance between the bond on the lip of the cup and the vertical stays on the outer lift.

Cripps' formulæ are inapplicable to a case of this kind, and the location of the flooding holes by calculation becomes exceedingly difficult, if not impracticable.



The method given herein is both quick and easy to carry out. A pair of proportional compasses are necessary for the work, these being set in such a manner that the distance between the points of the two long legs is exactly equal to the width of the space B or D, and the distance between the points of the two short legs is exactly equal to the width of the space C.

It will be seen that any rise or fall of the water in spaces B or D measured by the short legs of the proportional compasses will give a corresponding fall or rise in space C measured by the long legs of the compasses.

The cup and dip are, first of all, carefully drawn out to as large a scale as possible, preferably half full size. The water levels in the spaces A, B, C, D, and E throughout the processes of cupping and uncupping can then be readily plotted on this diagram (fig. 9).

In order to make fig. 9 intelligible, small explanatory diagrams, figs. 1 to 8, are given, showing the water levels at each successive step.

The numbers 1 to 7 denoting water levels in fig. 9 correspond with the respective water levels in the small explanatory diagrams, figs. 1 to 7. Thus the number 7 in space B indicates the water level in that portion of the dip when the cup and dip are in the relative positions shown in fig. 7.

In the following notes the expression AB refers to the vertical distance between the water levels in spaces A and B; the expression CD refers to the vertical distance between the water levels in spaces C and D, and so on.

A very important point to observe when locating the various water levels is that, since the pressure of the trapped gas in the dip is equal in all parts of the dip at any given instant; AB must always be equal to CD.

In drawing these diagrams it has been assumed that the inner lift throws 6 in. pressure, and the two lifts together throw 9 in. pressure. The overflow level in the tank is assumed to be 3 in. below the top of the dip. The level E of the water in the body of the tank is assumed to remain unchanged during the whole cycle of operations, which, although not strictly true, is sufficiently so for practical purposes.

A brief explanation of the construction of each figure will now be given.

Fig. 1.—A is located 3 in. below the overflow level so that when the holder is cupped A will just rise to the overflow level.

B and C are made level with the bottom of the dip, because the dip will be full of air when the holder is being put into action for the first time.

D will be at the same level as A, since, as shown above, AB is always equal to CD.

E will be 6 in. below A, since the inner lift throws 6 in. pressure.

Fig. 2.—Since the cup is full of water in fig. 1, and it obviously cannot be full in fig. 2, the water which has been lost must have overflowed at D leaving D level with the top of the dip.

Also, since the dip is full of air in fig. 1, and it cannot be full in fig. 2, the air which has been lost must have bubbled under the cup, leaving B level with the bottom of the cup.

C is located by making CD = AB.
A and E remain as in fig. 1.

Fig. 3.—Owing to the increase in pressure due to cupping, A rises 3 in. to the overflow level. The pressure of the trapped gas in the dip increases; therefore C is depressed, causing more water to overflow at D.

Since C falls B must rise in proportion. B and C are located by trial and error method with the proportional compasses until AB = DC.

Fig. 4.—D falls and C rises proportionally until CD = 9 in., which is the pressure thrown by the two lifts combined.

Fig. 5.—The cup sinks into the water until A and E are at the same point on the cup and dip as in fig. 3. The water rises in B, falls proportionally in C, and rises proportionally in D until AB = CD. Levels B, C, and D are obtained by trial and error method with the proportional compasses.

Fig. 6.—When the lifts become uncupped the pressure thrown by the holder falls to 6 in. A therefore falls a distance of 3 in. The pressure of the trapped gas in the dip is thereby reduced. D falls, C rises, and B falls proportionally, these levels being obtained by trial and error as before.

Fig. 7.—Level C is fixed at a distance of ½ in. from the bottom of the lip of the dip skirting plate. It is assumed that if the water in C falls below this point, the gas in the dip will "blow." Since C has fallen, B must rise proportionally. CD is made equal to AB.

Referring now to fig. 9 and reading this in conjunction with fig. 7, the mean level of C and D in fig. 7 is found by means of the proportional compasses and marked M7 on the dip plate. Similarly the mean level of C and D in fig. 6 is found and marked M6. Since the quantity of water in the cup is the same in fig. 6 as in fig. 7 the distance between M6 and M7 represents the actual distance fallen by the cup, in this case about 6 in.

It will now be seen that the cup has still a considerable distance to fall before the water in B can flow over the

top of the cup skirting plate. The holder therefore would "blow" if flooding holes were not put in. If, however, flooding holes are made in the cup skirting plate at or slightly below level B, fig. 7, the water from B will flow into space C, as shown in fig. 8, and prevent "blowing."

In the example in question the flooding holes require to be about 8 in. from the top of the cup. It will be found sufficient if these holes are made about 6 in. long by 1½ in. deep and spaced about 10 ft. apart.

Many variations of the problem here discussed occur in actual practice, but to the reader who has carefully followed the steps enumerated above, the solution of these variable problems should present no great difficulty, and it is therefore felt undesirable to complicate this article by further diagrams and explanations. It would perhaps be useful, however, to mention a few of the complications which are likely to arise in the course of design.

When the position of the flooding holes has been determined in the manner outlined above, another diagram should be drawn allowing for the presence of the flooding hole in the cup in order to make sure that the cup will pick up sufficient water when rising. If the flooding holes are put too low in the skirting plate it may be found that too much water runs out of the cup through the flooding holes when the holder is rising.

It is sometimes specified, especially when oil-filming is practised, that flooding holes shall be put in such a position that surplus water cannot overflow at D, fig. 2. In such a case it will be found necessary to fix the flooding holes very low, and great care must be taken in designing the cup and dip, otherwise the cup will not pick up sufficient water.

Care should be taken when designing the cup and dip to make the space C as wide as possible consistent with allowing reasonable working clearance between the bond on the cup and the vertical stays on the outer lift, also between the bond on the dip and the spiral rails. If the space C is made too narrow in proportion to spaces B and D it may be found, under certain conditions of pressure and depth of cup, that it is impossible to prevent the holder from "blowing" even by the provision of flooding holes.

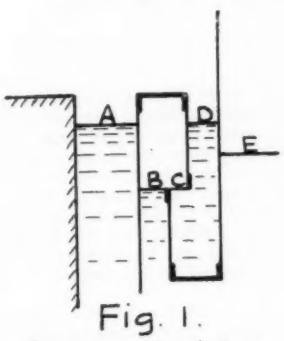


Fig. 1.
Inner Lift rising.
Outer Lift at rest.

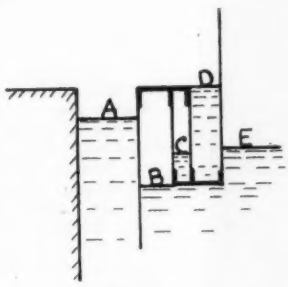


Fig. 2.
Just before cupping.

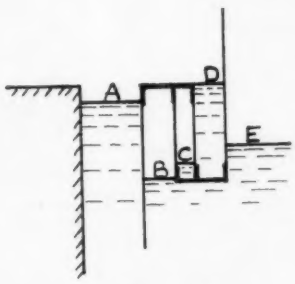


Fig. 3.
Just after cupping

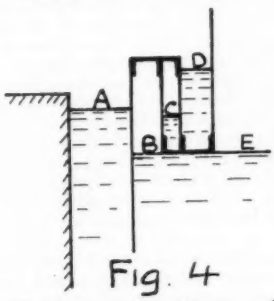


Fig. 4
Cup just clear of water in tank.

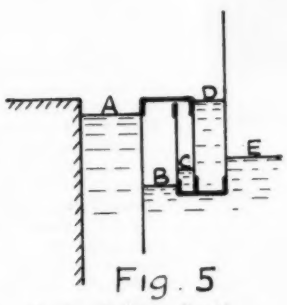


Fig. 5
Both lifts falling.
Just before uncupping.

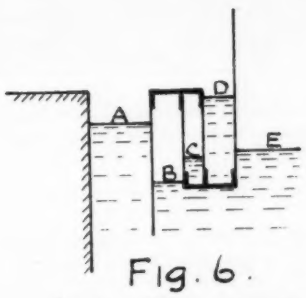


Fig. 6.
Just after uncupping.

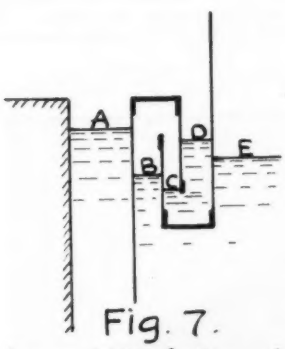


Fig. 7.
Inner Lift fallen about 6" after uncupping.

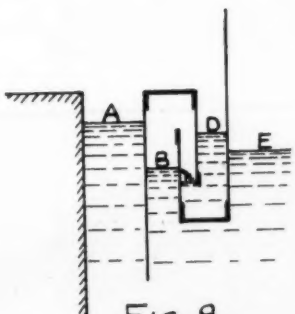
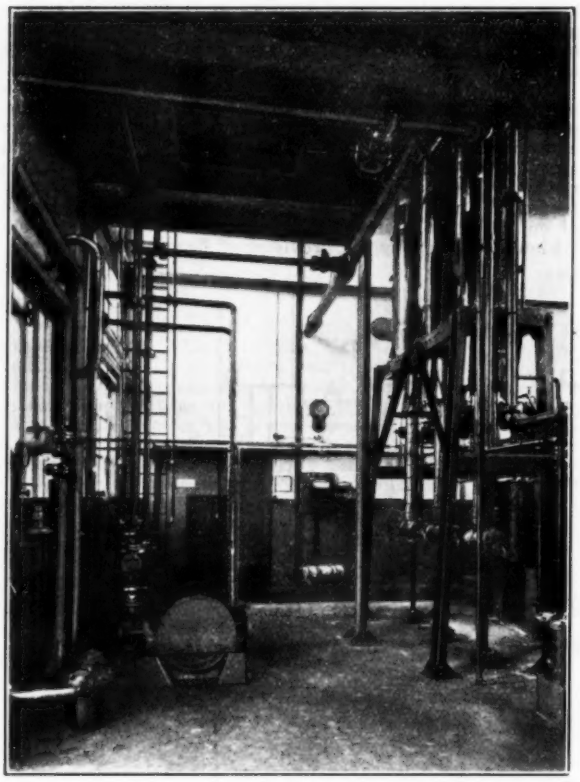


Fig. 8.
Water flowing through flooding holes into cup.

In fig. 1 the dip is assumed to be full of air, but it will be seen that after the holder has once cupped and uncupped, some of this air will have escaped under the cup. When the holder therefore comes to rest the second and subsequent times the water level in the dip will stand a short distance above the lip of the skirting plate. The actual distance may be obtained by finding the mean of B7 and C7, and this new level should be used in the second set of diagrams.

It is realized that this article is very "sketchy," but no amount of written explanation will take the place of practice in the construction of actual diagrams. It is hoped, however, that sufficient has been written to assist the reader to construct such diagrams with ease and intelligence.



Condenser Room, showing Evaporator (above), Feed Pumps (left), Fractional Condensers and Coolers (right).

T.I.C. Tar Plant in Sweden

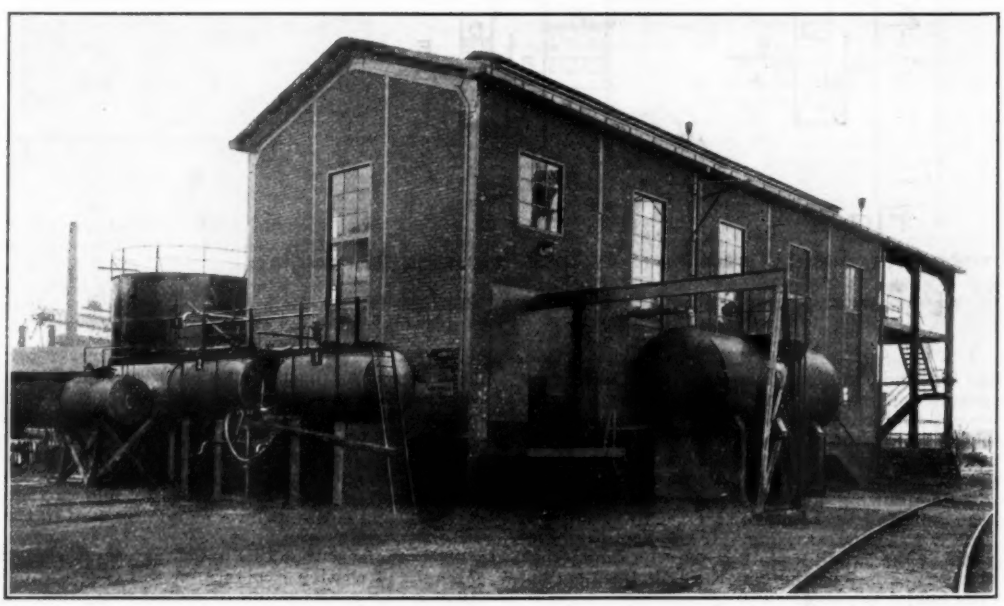
A recent addition to the plant at the Stockholm Gas-Works

Probably in no gas-works is progressiveness more ably exemplified than at the Stockholms Gasverk, Sweden. It is not the purpose of this note, however, to describe this works with its producer gas-fired horizontal coke ovens, comprehensive coke-screening plant, benzole recovery plant, waterless gasholders, &c., but to comment upon the recent addition of a modern tar distillation plant.

Pessimism in regard to the future of road tar does not exist at Stockholm; indeed the reverse is the case. This optimism is not speculative. The ability of road tar to withstand the extremes of temperature conditions which occur in Sweden has been proved, largely through the agency of a small commercial scale tar distillation plant which was used for some years at the Stockholm Gas-Works in co-operation with road engineering laboratories. And now, true to its progressive principle, the Stockholm Gas-Works has adopted an up-to-date version of the T.I.C. continuous distillation plant. This enables them to manufacture, with great simplicity, the many grades of road tars, blends, roofing tars, pitch, and oil products which they have developed to meet the conditions of the country and combat more readily the competition offered by bitumen.

The T.I.C. Plant.—The new plant was designed by the Woodall-Duckham Company, Ltd., London, and except for storage tanks, building materials, and a few small local oddments, the apparatus was supplied in its entirety from England. The single still of this T.I.C. installation is capable of distilling to a briquetting pitch residue 30 tons of crude tar per 24 hours. The capacity of the unit, when producing road tar residue within the viscosity limits of the B.S.I. Specification for No. 1 tar, may be increased to 50-60 tons of crude tar per 24 hours. Simplicity with extreme flexibility has been the keynote of the design. The plant is arranged for the production of pitch of any normal quality, road tars of any required viscosity either by straight distillation or by blending, tar-bitumen mixtures, and various well-defined oil fractions, and it includes crystallizing pans and a whizzer for naphthalene salts.

T.I.C. Still.—The T.I.C. still is a shallow vessel 7 in. in diameter by but 14 in. overall depth. The bottom is dished inwardly to secure strength of construction and increased heating surface and then covered with a low-melting alloy. By this means the effective depth of the still is reduced to 10 in. The cover of this still may be completely withdrawn to one side of the shell, by which means the whole surface of the alloy is uncovered. When the still requires cleaning the complete cycle of cooling down the plant, removal of deposit, and re-assembly may be carried out in approximately 10 hours. The whole operation is conducted in complete safety from a point outside the still.



Exterior view of building, showing Crude Tar Feed Tank (right), and Pitch Coolers (left foreground).

Tar treated in the still flows over the surface of the alloy in the form of a film $\frac{1}{16}$ in. to $\frac{1}{8}$ in. thick, and thus in normal operation the still contains no more than 5 gallons of tar. No portion of the still plate above the alloy level is subjected to external heat, and thus there is no risk of carbonization on the still walls, and fire hazard is reduced to a practical minimum.

Flow of Products.—The flow diagram illustrates the passage of crude tar and the flow of products through the plant.

Evaporator.—Crude tar is delivered continuously by either of two steam operated pumps from a feed tank to a steam-heated evaporator which automatically removes the entangled liquor and discharges tar containing no more than 0·5% water. The distillate from the evaporator is passed to a condenser from which the condensate flows through a separator where the small proportion of crude naphtha is separated from the liquor and discharged to a receiver. Dehydrated tar gravitates from the evaporator to the still, where it is treated at any desired temperature, depending upon the quality of the residue required.

Steaming Chamber.—Upon leaving the still the residue flows through a steaming chamber where it may be treated with open superheated steam for the removal of further oil.

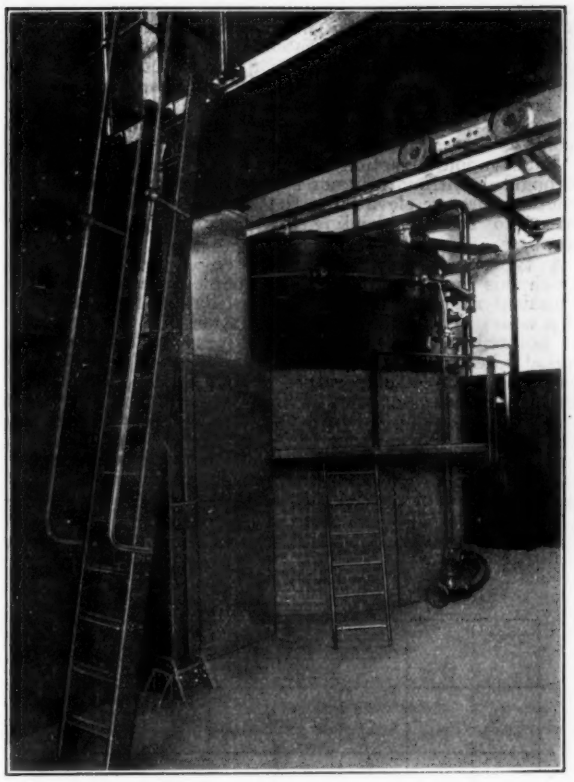
Pitch Coolers.—If pitch is the product, it gravitates to either of two pitch coolers from which, after cooling, it is loaded into drums for despatch.

Blending Tanks.—Alternatively, if road tar is being made the residue gravitates to either two receiving or blending tanks. The road tar blending tanks are equipped with barrel-filling arrangements so that special batches of tar may be loaded direct. Air-agitating pipes are also fitted to the tanks so that oil-tar and tar-bitumen blends may be prepared. The air used for this purpose is taken from the works pressure air line and a few minutes of air blowing is sufficient for mixing the contents of the tanks.

Bitumen Melting.—A pan set in the waste gas flues of the tar still brickwork provides melted bitumen for mixing with road tar. Solid bitumen is loaded into the pan by means of an electric chain hoist, and steam-jacketed pipes convey the hot and fluid bitumen to the blending tanks.

Tar Transfer Pump.—An electrically-operated Pulsometer pump is provided to transfer road tar from the blending tanks, through steam-jacketed lines, to either of two bulk storage tanks or direct to rail and road tank wagons.

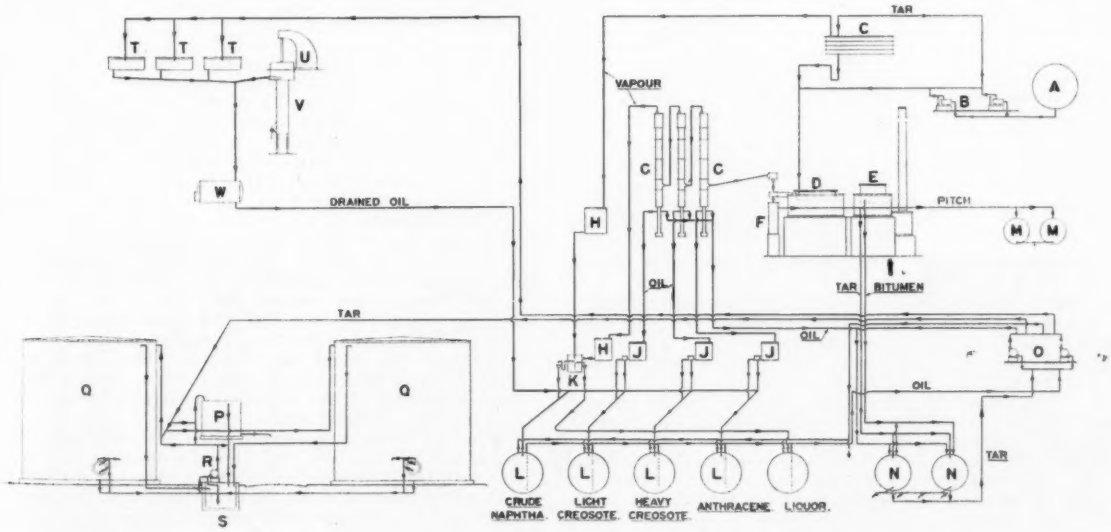
Road Tar Storage Tanks.—Two tanks each having a capacity of approximately 350 tons receive and store prepared tar from the plant. Arrangements have been made for the future extension of the storage accommodation. These tanks are fitted with special steam-heated local pockets so that only that portion of the tar it is required to pump is heated. This method of heating saves a large amount of steam.



Gas-fired Setting for Tar Still (right), and Bitumen Melting Pan (left).

Road Tar Loading.—A gas-heated tank has been installed to enable road tar from the storage tanks to be re-heated and loaded into distributing sprayer tanks for direct application to the roads. Tar is pumped from the hot pockets of the bulk storage tanks at a temperature of 60°-80° C. into the gas-fired heater, where its temperature is raised to approximately 140° C.

Condensation Plant.—The oil distillate from the T.I.C. still is joined by vapours from the steaming chamber and



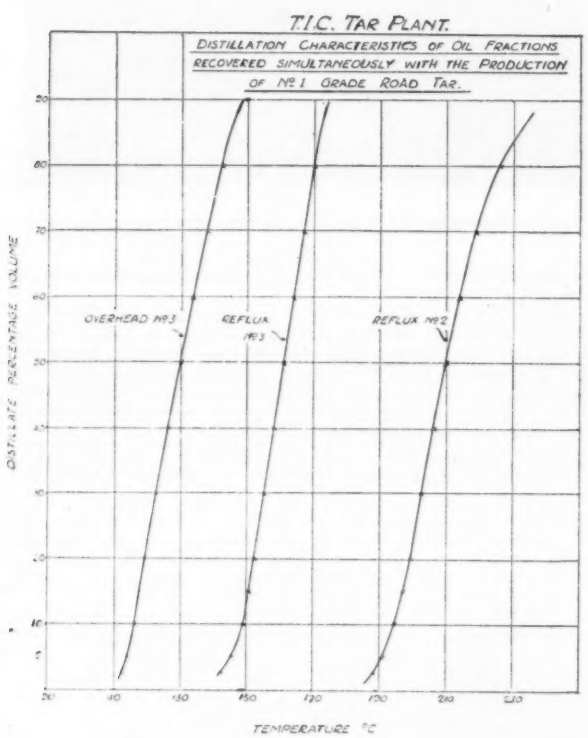
A. Crude tar tank.
B. Crude tar feed pumps.
C. Evaporator.
D. Tar still.
E. Bitumen pan
F. Steaming chamber.
G. Fractionators.
H. Condensers.
J. Coolers.
K. Separator.
L. Oil receiving tanks.
M. Pitch coolers.
N. Mixing tanks.
O. Transfer pumps.
P. Tar loading tank.
Q. Tar storage tank.
R. Tar loading pump.
S. Overflow sump.
T. Naphthalene pans.
U. ,, drier.
V. ,, bagging hopper.
W. Drained oil tank.

Flow Diagram of T.I.C. Tar Plant at Stockholm Gas-Works.

passed to a system of three fractional condensers coupled in series. By means of a water-cooled dephlegmator and a basal-stripping section, heated by means of superheated steam, the temperature of the vapour at the head of each column may be controlled. Thus it is possible to recover oil fractions having definite characteristics. Each column delivers a reflux oil at its base which passes through a cooler to a receiving tank. The final column also provides a final vapour fraction which is condensed and passed through a continuous liquor separator to its receiver. The fractionators are elevated so that the reflux oils may gravitate into the tar-blending tanks for continuous fluxing purposes.

A typical example of the degree of fractionation of which this type of equipment is capable is indicated in the graphical representation of the distillation characteristics of a series of samples. In explanation of them it should be pointed out that the samples were collected over a period when road tar was being made, by direct distillation, at a residue temperature of 250° C. The No. 1 fractional condenser was worked merely as a buffer to prevent heavy ends passing forward with the lighter oil fractions. The buffer fraction from the base of the No. 1 column amounted to less than 2% volume on the dry crude tar, and was either returned continuously to the road tar or isolated for other special purposes.

The sample fractions were distilled in a copper flask, by which method a danger of superheating occurs towards


T.I.C. TAR PLANT.
DISTILLATION CHARACTERISTICS OF OIL FRACTIONS RECOVERED SIMULTANEOUSLY WITH THE PRODUCTION OF No. 1 GRADE ROAD TAR.
OVERHEAD No 3
REFLUX No 3
REFLUX No 2
DISTILLATE PERCENTAGE VOLUME
TEMPERATURE °C

the completion of the distillation giving temperatures which tend to be high.

It will be observed that less than 10% of reflux fraction No. 3 distills at the temperature at which 90% of overhead fraction No. 3 has come over.

There is practically no overlap between reflux fraction No. 3 and reflux fraction No. 2.

The temperature at which the cuts are made can, of course, be varied within reasonable limits and equally satisfactory separation be secured.

Oil Transfer Pump.—An electrically-operated centrifugal pump is provided to transfer the oils from their receivers to tank wagons and the appropriate fraction to the naphthalene crystallizing pans. This pump is inter-connected with the tar transfer pump so that, in case of a breakdown, either may undertake the double duty temporarily.

Naphthalene Plant.—The naphthalene plant consists of three crystallizing trays in which the oil is cooled and the naphthalene salted out. The drained oil is collected in a receiver and transferred to an appropriate storage tank. The drained salt is loaded into a skip, operating on a monorail, and fed into a steam engine-driven centrifugal machine. The whizzed naphthalene is discharged through the bottom valve of the whizzer into a hopper chute fitted with a bagging gate. The naphthalene plant has been arranged for the convenient addition, later, of washing and pressing equipment.

Building.—Apart from the receiving and storage tanks the whole of the plant is accommodated in a steel-framed brick panelled building of substantial design. In order to comply with the requirements of Swedish industrial laws the distillation equipment occupies a room apart from the condensing plant. The transfer pumps have also been located in the still room.

The fractional condensers, final condensers, steam-heated evaporator, and crude tar feed pumps occupy the second room of the house. Here, also, the temperature records are centralized in the form of a Cambridge six-point electrical recording thermometer. Permanent records of all the important temperatures throughout the installation are collected on a single daily chart and are visible at a glance to the operator. In addition, an indicating instrument is provided which may be connected into leads of individual thermo-couples for the particular study of temperatures at certain points.

Beyond the condenser room a section of the building is put aside for the elevated naphthalene whizzer and bagging chute. The floor of this room is entirely free from obstruction and serves to store bags of whizzed salt. This room has been made sufficiently large to accommodate a naphthalene washer and press at a later date.

In the final section of the house the steel framework has been left open. The roof, however, is continued to exclude rain and snow from the naphthalene crystallizing pans, which are supported at a high level.

The roof of the building is constructed of concrete, and adequate top ventilation is secured for the enclosed rooms by means of a louvred apex.

All inside walls of the house have been rendered with cement plaster and serviceably painted in two colours.

Steel-framed windows and steel entrance and communicating doors are provided to afford adequate light and convenient access to all parts of the plant.

Fuel.—Gas was selected as being the most suitable and convenient fuel for this plant, and, in the circumstances existing at the works, the most economical. The gas is supplied to low-pressure gas equipment, manufactured by Messrs. British Furnaces, Ltd., at a pressure of 2 in.-3 in. W.G. The air for combustion is delivered to the air/gas mixers by a two-stage Blackman fan, the mixture being distributed to 12 tunnel burners equally spaced round the circular tar still setting. Extremely even heating is secured in the combustion chamber of the T.I.C. still by this method. A further burner is fitted beneath the bitumen melting pan, but normally the heat in the waste gases from the tar still setting is adequate to melt the small amount of bitumen required for tar-bitumen mixtures.

Flexibility.—The nature of the residuary product is controlled entirely by means of the pump delivering crude tar to the plant. The gas equipment is first set to provide a predetermined heat capacity. By increasing or decreasing the rate at which tar is supplied to the still the residue exit temperature may be lowered or raised to any desired level. For the convenience of the operator the temperature recording instrument is placed adjacent to the crude tar feed pumps and fractionator controls, and thereby concentrated supervision is rendered possible.

The demand for pitch at Stockholm is intermittent and for comparatively small lots. It has been readily demonstrated that, with the T.I.C. plant, a road tar programme can be interrupted to produce the required amount of pitch and be resumed without accumulating undesirable intermediate residues. The procedure adopted in these circumstances is to gravitate the residue made during the rising temperature period into the road tar receiver. During this period also the additional distillate from the still is condensed in the first fractionator and returned by gravity to the road tar receiver. Having attained the desired pitch temperature the residue is switched to the pitch coolers and the fractionator controls are set as for normal pitch production.

The procedure is reversed when the required amount of pitch has been made, and it is found that the quality of the road tar is unaffected by this method of operation.

Construction.—Robust construction and the use of suitable metals combine with simple design and flexible performance to increase the attractiveness of the T.I.C. plant. The workmanship sets durability as one of its foremost aims. Rustless iron protecting plates are fitted to those parts of the plant most subject to the corrosive action of residuary tar and vapours.

Acknowledgment.—We are indebted to the management of the Stockholms Gasverk for their permission to describe and illustrate their T.I.C. plant and to Herr Ingenjör G. H. Hultman, the Chief Engineer, for providing the technical data included in the article.

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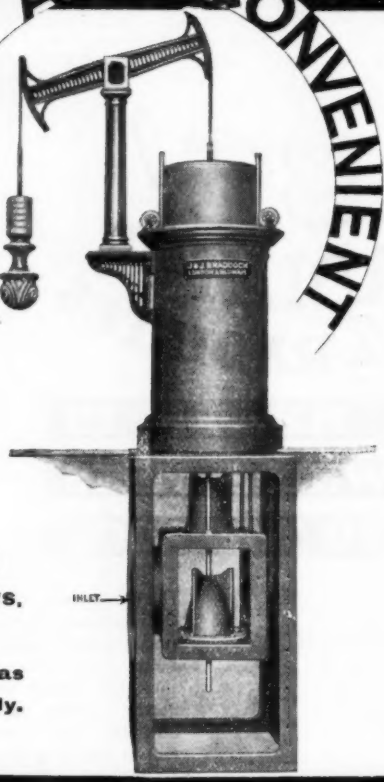

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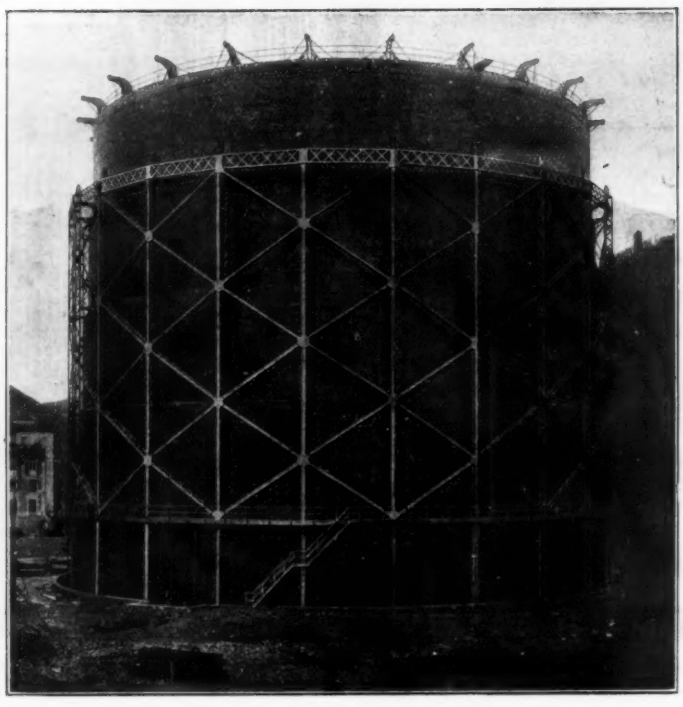

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Development of Coke Sales in Country Districts

by
S. C. E. FOX

In a Paper before the Coke Salesmen's Circle, held at 28, Grosvenor Gardens, S.W. 1, on Feb. 13, Mr. S. C. E. Fox, of the Tottenham and District Gas Company, discussed the development of coke sales, with particular reference to country districts.

With the growing tendency of the demand for gas coke to exceed the available supply, suggestions for further extending its sale may, at first thought, appear superfluous. An examination of the yearly return of coke prices, however, reveals the fact that large quantities are being sold at low prices. Such a condition need not obtain as the domestic market—which is the most lucrative outlet for gas coke—is still far from satisfied.

For a gas undertaking to dispose of all its coke through this channel, which is generally acknowledged as the ideal for which to aim, a concentrated and unrelenting effort is needed from all concerned in its production, preparation, sale, and use.

In spite of the fact that the sale of coke has a material bearing upon the price charged for gas, the suggestion that its disposal should be the subject of special attention seldom fails to revive the argument that gas should receive the primary consideration, letting coke take care of itself.

In the past, perhaps, this attitude may have been defensible, but to-day, when the conservation and efficient utilization of the country's fuel resources have assumed such considerable importance, it would be absurd to attempt the relegation of coke to a position of no consequence.

Signs are not lacking which indicate that the general public, particularly in big cities, is becoming increasingly conscious of the advantages of a smoke-free atmosphere and is voluntarily turning its attention to the question of using smokeless fuels. The suppression of the smoke nuisance should be a national concern as its harmful effects upon the health of the community, buildings, and the country-side needs no recapitulation here. This lends power to the suggestion often mooted that the marketing of solid smokeless fuels should be undertaken by a Central Marketing Board. This would make for simplicity and help consumers who are confused by the diversity of names, prices, and source of supplies of existing solid smokeless fuels.

Coke sold through such a Board should be known under another name, which would tend to raise its status. At present it is regarded by the public as simply a bye-product of the Gas Industry, and the tendency is to confuse the term "bye-product" with "waste product." With such an erroneous impression prevailing, salesmen have difficulty in justifying the price charged for coke and it is frequently regarded as a low-grade fuel.

Such a Board would remove the onus of surplus coke disposal from the gas engineer. Pending the fulfilment of this semi-Utopian dream, which is not compatible with current business methods, the problem of coke sales has to be faced.

Two Solutions.

Two possible solutions present themselves; one the Micawbian attitude of "waiting for something to turn up;" the other a definitely planned conscientious sales effort, which should start at the Works with careful production, grading and screening, coupled with prompt and courteous deliveries supported by an efficient outdoor selling staff concentrating on the most lucrative market. Such a course has become the accepted policy of the Tottenham and District Gas Company, and to those considering a similar line of action we of the Coke Sales Engineers' Department dedicate this Paper, trusting that our experiences outlined herein will be of assistance to those faced with problems similar to those which we have encountered and endeavoured to overcome, thus fulfilling the primary object of this Circle.

We cover a large and scattered area which precludes the possibility of completely centralizing our Distribution Staff. Separate units have therefore been developed in the country districts. Broadly speaking, these districts had received no special attention regarding the disposal of coke until two years ago, when a small Department was organized for this purpose.

The Department's duties included:

(1) The introduction and popularizing of the open coke grate.
(2) The extension of the sale of coke for the domestic coke boiler.
(3) Investigation of coke complaints.
(4) The development of new outlets.
(5) The education of consumers generally regarding the use of coke and its advantages.

The personnel was recruited from the technical side who had experience of selling on the district. The Department's operations commenced in the spring of 1933 with a free hand to deal with the situation as it was found, also with the reassuring knowledge that the Company attached considerable importance to the sale of coke. These two vital factors contributed very materially to any measure of success that has been achieved.

A 100% domestic market was the goal aimed at and the initial step taken was the preparation of a census of the district, this serving the purposes of:

(*a*) Enumerating the coke-burning appliances already in use.
(*b*) Ascertaining the sources of coke supplies for these appliances.
(*c*) Familiarizing consumers with the open coke grate, and, most important of all,
(*d*) Making personal contact with potential consumers.

Incidentally, it might not be out of place to mention here that in small towns and country districts the last item is of great importance.

Census Scheme.

Reverting now to the census scheme and the manner in which it was carried out, a list of all the consumers in a section of the district was drawn up and sub-divided into ordinary and prepayment meter consumers. To the first a letter was addressed introducing the Coke Sales Representative, at the same time calling attention to the Company's policy of providing free advice and service to coke users, together with leaflets illustrating coke grates and particulars of our coke contract scheme. With the exception of those sent to business premises all the letters were addressed by hand, the contents being brief, non-technical, and informal.

To the prepayment meter consumers a special leaflet was enclosed introducing a scheme whereby the Company was prepared to supply and fix a certain type of coke grate, entailing no cash payment, the cost being liquidated by so adjusting the meter to deduct 2 c.ft. of gas for every penny until a stipulated sum had been paid.

After the dispatch of these letters a call was made, where possible within three days, giving the recipients time to read the contents but not sufficient time to forget. After several hundred calls had been made and recorded, stock was taken of the information gathered thereby. All the useful information correlated was overshadowed by two predominant facts which were very disconcerting to a Department anxious to make rapid progress in a new field of activity.

First and foremost the "fumes bogey" was firmly implanted in nearly all consumers called upon, and, secondly, the coke grate being something new, they were, with the true British conservatism, reluctant to be the first to "buy and try." Now here were two knotty problems which required solving before any substantial progress could be hoped for.

A simple non-technical explanation was offered to counter the "fumes" objection, it being pointed out that these fumes escaped up the chimney in precisely the same way as the fumes and smoke from coal fires. This explanation usually met with a chilly reception and was frequently opposed by the argument that the coke from watchmen's braziers always emitted fumes; the reply that this was

inevitable as no chimney existed seldom completely convinced a sceptical person.

The next step was the installation of a coke grate in the local showroom, which was certainly helpful, but even then many people suggested that either a " special " coke was being burnt or that a particular type of chimney had been constructed. The situation developed into something approaching an impasse, so that it became imperative to produce an argument that brooked no contradiction. After careful deliberation the idea of asking the local doctors to install coke grates in their private quarters was hit upon. We took the line that if we could cite the case of doctors using coke in the open grate the " fumes " bogey would quickly disappear.

Even in this quarter, however, we received a rude shock, as, much to our astonishment, the same erroneous impression prevailed, but fortunately the gentlemen interviewed were amenable to reason and several grates were fitted.

With these valuable cases as examples, dental surgeries, nursing homes, and schools received attention for the reason that anything installed on such premises must be above all suspicion regarding the effect upon the health of the occupants. Here again objections were overcome and in each case gas coke was introduced, and a citation of these installations proved infallible for dispelling the " fumes " objection.

A Sales Campaign.

With this incubus lifted, a definite sales campaign was formulated with a lighter heart. At first the house-to-house canvass suggested itself but, as stated, it was apparent during the previous canvass that consumers were reluctant to try something new and preferred others to take the initial step.

This indeed was a formidable form of sales resistance, which had to be broken down. Press advertising and publicity may have brought results gradually, but this method of attack savoured rather of the passive instead of active sales effort. To start the ball rolling it was apparent that it would be necessary to install a few grates in places where they would be seen in daily use by a considerable number of people. It was argued that interest would thereby be aroused, inquiries ensue, and, we hoped, sales effected.

Now where should these selected sites be? Somewhere, if possible, where people foregathered in their leisure moments so that they would have time to take notice of any innovations.

Few forms of diversion are offered by the district, so that a good deal of time is spent in the local inns, of which there are considerable numbers. The nature of the business carried on in these places calls for an intermittent form of heating, which the gas-ignited coke grate is able to provide. During the closed period of the afternoon the coke fire can be allowed to die out, thus effecting a saving in fuel costs, and it is readily re-kindled as the time for the evening opening approaches.

Gas fires, of course, are ideal for this purpose and a number were already in use, but in many cases the heating was provided by coal fires, retained at the request of patrons who appreciated the homely atmosphere created by this type of fire.

It was not difficult to persuade proprietors of these licensed houses to give a coke grate a trial, and soon a number of coal grates had been displaced, so at last the outlook appeared more hopeful. It was apparent, however, that not everyone cared to admit that he had been in the local inn before asking for further particulars, so that alternative places were sought.

Tea shops, restaurants, clubs, road houses, and like establishments were canvassed because these were situations where the installation of coke grates would act as a subtle form of advertising and help to sell themselves—the most potent form of sales development. After weeks of patient work entailing many calls, meeting rebuffs and objections, grates were finally supplied to all these types of premises, giving every satisfaction to the users and fulfilling our hopes that further business would accrue.

One idea led to others and we prevailed upon the local estate agent to install a coke grate in his outer office, where it was seen by prospective home seekers. This was a shrewd move because many people will have grates and other apparatus installed before taking up residence, whereas afterwards they refuse to consider such proposals on the ground of inconvenience.

In this particular case the agent installed three other grates in his offices, two in his private house and has recently placed an order for grates to be fitted in a block of new houses fitted with the back boiler type of hot water service.

Efficient Fitting Staff.

With the first approach of the winter season orders were being received at the rate of two or three a day. Attention was now directed to getting together an efficient fitting staff, as in most cases, and more especially in old premises, the conversion from a coal to a coke grate requires an appreciable amount of structural alteration. Sometimes the job necessitates fixing a complete tile surround and hearth, or remodelling the existing fireplace to take a particular type of coke grate. Such work must be undertaken by a competent fitter because more comment or criticism is aroused by one job badly executed than by a dozen well done.

The Department possesses such a man, who is kept engaged almost exclusively upon this class of work, thus gaining a specialist's experience and rapidity in working. When necessary his services are augmented by others who tackle the more simple conversions.

Some undertakings entrust this work to the grate manufacturers, which has something to be said for it, but it has one big drawback inasmuch as it is not possible for the representative who obtains the order to promise a definite date for fixing, which is so helpful to sales during a cold spell when consumers are reluctant to be without a fire longer than is necessary.

We at Tottenham make our representatives responsible for the fitting staff so that they are in a position to arrange dates to suit the convenience of consumers. This has one other major advantage—after the grate has been installed the work is inspected and an endeavour is made to secure a coke contract. After the lapse of ten to fourteen days a further call is made when it is generally found that friends and neighbours of the consumer have seen the new grate in use. Usually the names and addresses of these people are willingly given, calls are made, and in many cases orders secured. This method of selective canvassing has been far more productive than the house-to-house call.

All coke matters are treated by one Department in our country district, and complaints, strange as it may seem, are frequently turned into sales. For instance, the common complaint that a coke boiler will not give continuous night operation comes to hand. Of course, the coke is blamed but an examination of the installation almost invariably reveals the necessity of some small adjustment to the boiler or the flue pipe. These minor adjustments are carried out free of charge to our coke consumers. A subsequent call usually finds a delighted user who states that the boiler is working better than ever before and would we please call on " Mrs. Brown," who has been experiencing similar trouble. Adjustments are carried out for " Mrs. Brown " provided she signs a coke contract or is already a user. The news of this service spreads and many fresh coke consumers are secured and retained. Upon the satisfactory settlement of a coke complaint, other appliances for burning coke are suggested or perhaps the advantages of the gas poker are demonstrated.

Since the sale of coke-burning appliances is largely seasonal, the Department devotes its attention to other channels during summer months. From our central coke office at Headquarters we keep records of all consumers under contract and these records are reviewed annually and a list is prepared of persons who have signed contracts for coke but have not placed orders for a period of twelve months. A call is made to discover the reason and to get the consumer on the " active list " again. This matter is worthy of close attention, as the retention of regular consumers is equally or more important than the continual seeking for new ones.

Another list submitted to our Coke Department is one giving the addresses where coke boilers have been installed by builders, to whom a subsidy is paid for this information. These installations are inspected to ensure that the users are obtaining satisfaction from them and to secure a coke contract. Where the premises are unoccupied we attach to the boiler an envelope containing particulars of our coke contract scheme, together with a short letter calling attention to the fact that upon receipt of a postcard (enclosed) a representative will call to give information regarding the efficient running of the coke boiler.

Large-Scale Applications.

Although sales development had been chiefly concentrated on the domestic field, industrial applications had not been overlooked. Care and forethought were necessary here because, with the now rapidly increasing demand for domestic purposes, little surplus coke was available to supply any big industrial requirements.

These loads are apt to be precarious for the reason that even though coke may supplant a competitive fuel there is always present the possibility that coke itself may be displaced. These changes happen quickly and the frequent fluctuation in the demand for coke in bulk is disconcerting

to the man at the works, who naturally prefers the steady load.

Semi-industrial users such as large-scale central heating plants, laundries, and places where cleanliness is important come under a different category, and such outlets are well worthy of attention. We regularly supply such places and make periodic calls to ensure that no troubles or difficulties exist when using our coke. Consumers appreciate this service and are therefore reluctant to try alternative fuels, feeling that they are severing a connection which has been of material help to them.

Before concluding may we dwell for a moment upon the controversial topic of " do coke grates displace gas fires "? Throughout our sales campaign we keep careful records of all grates installed and the type of heating appliances they displace. Of the total fitted, 4% have displaced gas fires. Usually an investigation of these cases shows that the gas fires were used for continuous heating and found to be too costly to run and would in any case be removed even if the coke grate were not available. Is it not significant that consumers considering such a change come to the Gas Company for alternative methods of heating?

Discussion.

[It will be noted that, following the example of certain other technical organizations, the Coke Circle have decided not to refer to speakers by name—except in the case of the Chairman—but only by numbers.]

Mr. W. L. Boon (Manager of the London and Counties Coke Association), presiding in the absence of the Chairman of the Circle (Mr. H. C. Smith, of Tottenham), remarked that here was an instance of a " virgin " district which Mr. Fox had been primarily instrumental in converting into a source of revenue for his Undertaking. Large quantities of coke sold at low prices were possibly not so profitable as wider sales of smaller quantities at a more economic price. The domestic market had the drawback, however, of being seasonal—which affected the undertaking more than one might imagine. Sufficient stock space might not be available to carry large amounts of coke over for the following season's demand. At the same time it was feasible that some undertakings were making a mistake in catering too closely for the demands of the industrial field rather than exploiting opportunities of the domestic field. The domestic field held infinite possibilities for coke, especially when they realized that 40 million tons of raw coal was yet burnt in the domestic grates of this country every year. The natural development would be a gradual but definite change over to smokeless fuels. They must appreciate that the open coke fire—except during the last year or so—had never been pushed in the manner Mr. Fox had outlined to them. This effort was probably unique in being the first development in a country area to be tackled in a business-like way, and a very wise method had been adopted in getting these appliances into the houses. Mr. Fox had pointed out that this bye-product, coke, was looked upon by many as a waste product, and should, therefore, be sold at a cheaper price. This was one of the difficulties they had to face. The average customer had no idea of the process of the costs involved in the production of gas coke. It was not a waste product, said Mr. Boon, but a first-class commodity, and it was necessary to let the customer know that.

The sulphur fumes bogey was another matter which he was glad to see that Mr. Fox had brought up. This was often an obstacle to coke sales. People did not realize that the fumes given off from burning raw coal were not so pronounced because the sulphur fumes were disguised in other more harmful fumes. He was glad to observe the importance Mr. Fox attached to the retention of existing consumers. They were apt rather to go after new consumers, instead of ensuring that their present customers were satisfied. They should not adopt the attitude that their coke appliances were all functioning satisfactorily. They could maintain and keep close contact with their customers, and endeavour to show them that the Gas Industry was out to give them service, and, in effect, make one sack of coke do the same work as two sacks. The value of satisfied consumers was very great, because they became potential and often enthusiastic salesmen in recommending appliances, and the use of coke to their friends.

An Achievement.

No. 1 remarked that Mr. Fox had been far too modest in his Paper, which showed what one individual, with the aid of a small staff, could achieve, when he set out to do it. In regard to coke grates being fixed by the gas undertaking, in preference to the manufacturer, this brought to his mind the question of *entrée* to consumers' premises, and the advantage it gave, not only from the coke side, but also from the gas side, to have the opportunity of introducing a gas poker for lighting the fire, which often led on to other appliances, such as a gas water heater. This might seem obvious; but it was a point worth keeping in mind. It was certainly worth while to train gas fitters to fix coke fires, so that the gas undertaking could get their own men on the job. He also referred to clinker formation, and said there were many people who asked to be supplied with coke from which the clinker had been removed! They thought that clinker was a constituent of coke. As to making one sack of coke do the work of two sacks, there were many causes of inefficient working. The average efficiency of the small domestic boiler was round about 50%; but he had found some working at only 25% efficiency. He also found that the gas poker was left burning far too long when lighting up. Some used boiler nuts for their open coke fires, and again left the gas on too long when lighting these. The user himself might not worry about it, but his neighbour might—and the majority of coke fires sold by recommendation. It was essential, therefore, to see that the client was getting the best use out of his appliance, and the fuel he was using in it; only by contact could this be done.

Mr. Fox stated that the district he covered was not very large, but in just under two years they had sold 460 coke fires, and had doubled the number of people under coke contract. The amount of coke supplied by his Company under contract was 83%; the remainder was purchased by users direct from merchants.

No. 2 asked if Mr. Fox had interviewed any of the growers in his district. At the moment many growers were using underfeed boilers burning small coal; but he instanced cases of satisfactory adoption of gravity feed coke boilers for this purpose, and went on to outline some of the advantages of this type of boiler.

Mr. Fox stated in reply that as the demand for coke for domestic purposes was so large, his Company had not regarded this other line of business referred to by No. 2 as particularly profitable, as the fuel required was generally forge coke purchased at low prices. When he mentioned that coke might be displaced by other fuels, he had in mind particularly instances of large industrial plant, where coke had been displaced by coal in Lancashire and similar boilers.

No. 3, in reference to the previous speaker's remarks, inquired if the gravity feed boiler necessarily ensured the use of coke.

The Chairman replied that the gravity feed boiler was essentially designed to use coke, and while other non-bituminous fuels could be used, they were not so efficient, and generally not so economical.

Use of Coke in the Ordinary Grate.

No. 4 inquired whether Mr. Fox had any experience of the burning of coke in the ordinary coal grate. His undertaking had tried selling coke for this purpose. Also, did the Tottenham Company supply large coke or ignore it entirely? He also asked if Mr. Fox had tried taking a sample coke grate round the district in a car, and demonstrating it in customers' houses.

Mr. Fox replied that he had taken account of such instances, and, in addition, of cases where there was no gas supply. The burning of coke in coal grates had been practicable in the case of kitchen ranges, but not for the open grate, because it usually meant starting the fire with coal, and people were reluctant to have double storage space for the two fuels. Grade 1 coke was generally used for industrial purposes. He had not tried out the idea of taking a coke grate round in a car.

The Chairman said that investigations were being carried out on a grate which would be suitable for country districts, where there was no gas supply available. Below the coke grate there was provided a small coal grate for the purpose of igniting the coke fire more easily, after which the coke carried on alone. He would consider it unsatisfactory practice to burn high-temperature coke in the ordinary open coal grate. While satisfaction might be obtained in certain instances, there would be many cases of unsatisfactory operation, and these users would not again consider the utilization of coke. A proper coke grate should be put in the first place. He considered that the Tottenham Company's idea of putting in a coke grate, without involving any capital expenditure on the part of the consumer, and taking payment through the slot meter, was an excellent one.

No. 5 inquired as to the nature of the complaints Mr. Fox had received in connection with coke fires; had he experienced too great a heat, burning out of the fire bars, and so forth? He agreed that the gas undertaking should do their own fitting work in regard to coke grates.

Mr. Fox replied that as regards too much heat from the fire, when estimating for the coke grate he took special note of the size of the room and also its probable temperature, under average conditions; and on this he recommended a suitable fire. It was very important to do this, because often salesmen were inclined to fit grates to the size of the existing coal fireplace, which might well be much too large for the size of the room. There was need for better control of coke fires, which was a matter which should be tackled by the manufacturers. They had not yet had any experience of the burning out of the fire bars; but he understood that many manufacturers were now producing special heat-resisting bars which they unconditionally guaranteed for two or three years. It was his Company's practice always to peg the grate back into the hearth, which was the most effective method of keeping the grate in position.

Ignition Time.

No. 6, referring to the length of time necessary to ignite a coke fire, observed that in one case within his experience the gas had been left on regularly for three-quarters of an hour. He had demonstrated to this user that this fire could be properly lighted in fifteen minutes.

No. 1 observed that new sales at any rate were generally effected by recommendation from other sources. Therefore, it behoved them to give satisfaction at the outset. They should

realize that if the coke grate business grew to any large extent it might be found that they were fixing so many grates that they had no time to test them all out. The result would be complaints. His Company recently got out a circular which attempted to cover all types of coke grate with a simple explanation as to how to light and maintain each; this was very useful. Members of his Department had found that no fewer than nineteen consecutive complaints were due to not knowing how to maintain the fire. He was not in favour of the shaking grate; a light poker was better.

No. 6 referred to the conversion of ordinary grates to burn coke, which, he suggested, could often be done satisfactorily.

No. 7 criticized the appearance of some of the present designs of coke grate, and remarked that he had at his own home three coal grates in which he burnt coke. In one he used a gas poker for ignition and in another the fire was lighted with wood and paper, the latter method proving perfectly satisfactory.

No. 8 said that he had experienced trouble in trying to use coke in the ordinary coal grate. He advocated the installation of a coke grate every time as being the only safe and satisfactory means of burning coke.

No. 9 said he also found it quite satisfactory to use paper and wood for lighting a coke fire. He suggested that the makers should issue a proper instruction pamphlet with each grate. When his Company commenced to push coke sales in a newly acquired district they made a feature of sending out 14-lb. bags of coke. They disposed in this way of 1,100 bags, which undoubtedly gave an excellent start to the domestic coke trade in that area. As a result they received at least 800 repeat orders. The offer of these sample bags was advertised in the local Press and people merely had to go to the showroom and ask for them.

No. 4 said that the majority of consumers in his district could not afford the £4 or so initial outlay on a coke grate, so that he had to see whether coke could not be burnt in the existing coal grate. Generally speaking, if there was sufficient bar space, it was found to be all right.

Mr. Fox, in answer to a question regarding draught, stated that if the canopy was low the fire would not burn satisfactorily. If, on the other hand, it was too high there would be poor chimney pull, and one would be inclined to get fumes coming in the room. A good method in such cases was to cover the upper section of the hearth space with a sheet of plate glass. This applied mainly to the big open hearth in which a basket grate had been installed.

No. 8 said that his Undertaking had overcome this difficulty by fitting a sheet of asbestos all round the grate except for a small opening in the centre, and this had the effect of assisting the chimney pull.

Maintenance of Coke Grates.

No. 10 inquired if the Tottenham Company undertook the maintenance of the coke grates during the time they were being paid for through the gas meter.

Mr. Fox replied in the affirmative, but said that the cost involved was very small. The fire bricks were inclined to be troublesome at times. This method of paying through the meter was, however, very popular. Furthermore, in many instances they were fitting these coke grates in the place of old kitchen ranges which were fast dying out, with the result that people who had been in the habit of using the coal range for a certain amount of their cooking, now had to turn to the gas cooker. For converting the kitchen range to coke they made an additional charge of 25s., the remainder being paid for through the meter. They had carried out hundreds of such conversions.

No. 11 inquired what happened if a consumer changed houses before the amount involved in the coke grate had been paid off through the meter.

Mr. Fox replied that they tried to persuade the incoming tenant to take over the coke fire, though it was possible for the original consumer to take the grate with him, provided he paid for the refixing.

No. 12 asked Mr. Fox to what extent he pushed coke for domestic boilers, and what competition he experienced with other fuels for this purpose.

Mr. Fox said that there were a number of domestic boilers in his area, the coke for which was obtained direct from local merchants. When these users found that the Gas Undertaking could assist them in the running of their boilers, and give them better results, they had often changed over to Gas Company coke. They had also experienced a certain amount of competition from imported fuels; but the majority of coke now used in this district came from his Company.

No. 13 referred to the use of a special fuel, which was claimed not to form any clinker and was a very high-grade coke. There was, in addition, a very much cheaper and less satisfactory product with the same name.

Other speakers also mentioned experiences with this fuel, the main objection to which, apparently, lay in its very high price.

The Chairman reminded them that there were several types of fuel sold by various gas undertakings which bore special proprietary names, although they were all coke. After a few further comments by members on the relative merits of these different fuels, the meeting closed with a hearty vote of thanks to Mr. Fox for his Paper, on the proposition of the Chairman.

Hornsey Gas Company

Low Price of Gas

The Annual Ordinary General Meeting of the proprietors of the Company was held at 5, Great Winchester Street, London, E.C., on Friday, March 1, 1935—Mr. A. M. Paddon, M.Inst.C.E. (Chairman of the Company), presiding.

The General Manager and Secretary (Mr. K. Leslie Mortimore, A.C.A.) read the notice convening the meeting.

The Directors' Report and Statement of Accounts for the year ended Dec. 31, 1934, were taken as read.

THE CHAIRMAN'S ADDRESS.

The Chairman, before subjecting the Report and Accounts to any critical treatment, first drew attention to the rather peculiar circumstances in which the Company carried on its undertaking. Its statutory area of supply, he pointed out, was the parish of Hornsey—and the parish of Hornsey did not extend and did not grow. It was practically encircled by areas already fully supplied with gas; so that any extension of the Company's area *per se* could not be expected, and it could only direct its efforts to encouraging and inducing a greater consumption of gas in its existing area.

Another fact to be considered was that the Company was selling gas at an extremely low rate—the lowest rate at which any Gas Company in the Metropolitan area or the suburbs was selling gas over the whole of its area.

These two factors in themselves constituted a serious handicap and a disadvantage to the Company as compared with other *quasi*-suburban undertakings which had a margin of expansion and the expectancy of ordinary building developments.

The Report showed that the sale of gas had decreased by 3·4%; bearing in mind the two factors he had mentioned, and the figures of other undertakings for the same period, the Company could congratulate itself that the decrease was so small. There were many factors qualifying it, and some of them were apt to be overlooked. One was that the Company was rapidly replacing the type of apparatus used by the public for ordinary domestic purposes, and the implements with which it was providing them were vastly more economical than those displaced

If one compared a gas cooker as provided to-day by any advanced manufacturer with that which was in use some 10 or 12 years ago, one would find that the modern one would do the same work with greater convenience for something like 20% less gas. That, of course, had an immediate effect on the recorded output of the Undertaking. But one should not shrink from it, because it must in the long run bring home to the users of gas the greater economy of its application. So that he did not think the proprietors need take the figure representing the decreased sale of gas altogether unfavourably, because in connection with it one should bear in mind that the Company had increased the number of its consumers by over 300; also the sale of apparatus had become infinitely greater than it was three or four years ago, and that was due very largely, of course, to the practice among the consumers of acquiring their apparatus by hire-purchase. The Company must conform to the demands of the public in that way, which were quite general and did not apply merely to gas appliances but to almost every other kind of household amenity. It might be assumed reasonably that hire-purchase was a precarious kind of business and involved some possibility of loss. But when the matter was reduced to actual terms through the Company's experience, it was found that there was very little loss to the Company in meeting the public in this way.

The Chairman called attention to the issue of £40,000 4% Debenture Stock made during the year at 103½%, and said that that was an assurance that the Company stood well in the eyes of the investing public.

The capital statements indicated that the Comapny had all the authorized capital it was likely to require in the immediate future, and very much more than that. The debit side of the capital account showed that the Company had expended £6,166, which figure was reduced by £3,728 by way of depreciation. Although it was obvious that the capital account had not been improved by the comparison of those two figures, yet to-day the capital expenditure stood at well under £500 per million c.ft.—which in these days was not so bad. Of course, in the past the Company had been able to record a very much lower

figure. When one considered the change in the value of money, the advance in the costs of materials, and the fact that a very much larger amount of working capital than formerly had become necessary to promote the business of the Company, it would be appreciated that a great many undertakings would very gladly change places with the Company in respect of capital expenditure per million.

Discussing the debit side of the revenue account, he said the figure of £17,360, representing cost of repairs and maintenance of works and plant, showed an increase of £3,262 on the figure for the previous year, the difference being accounted for almost entirely by a larger measure of depreciation in connection with gasholders, following out the principle that these assets should be treated in this way in order to preserve their true value to the undertaking. The Chairman considered that when a Company was not expanding its business, attention to this point was more essential than ever. But the Company had succeeded in writing down by over £3,000, which was no small achievement in an account of this kind.

The contribution to Renewal Fund was £2,000. The Company had not the prospective demand that the ordinary gas undertaking had upon a renewal fund, for its works were in very excellent order and considerably ahead of the contemporary demands upon them. When an undertaking was going ahead continually and had to renew and rehabilitate its plant, a renewal fund had a very important bearing on the accounts. The Hornsey Company had no very great demands upon its Renewal Fund, but the Fund was there if the need for it should arise.

Coming to the credit side of the revenue account, he said it would be expected that the receipts for gas would be less—and they were less by £4,400. The figure for meter rentals was interesting; that figure was £8,288, which represented an increase. That was a very useful criterion, and was corroborated by the increase in the number of consumers. The Company was not losing ground. The figure for rental of stoves, fittings, &c., had decreased, due mainly to the fact that, as the result of hire-purchase, ownership was replacing the letting of apparatus by the Company.

Increased Receipts from Residuals.

The figures relating to income from residual products were much more cheerful. Coke had brought in over £4,000 more than in the previous year, the figures for tar, &c., had increased by £2,336, and even in respect of sulphate of ammonia there was an increase of £504. The total increase in receipts for residuals was £5,518.

The ultimate issue was shown at the bottom of the revenue account. In spite of the big decrease in the sale of gas, total receipts were only £40 less than in the previous year. On the other hand, expenditure had increased by over £3,000, for reasons he had explained, and the profit had fallen by £3,054.

A sum of £20,641 had been brought into the profit and loss account, and, after meeting all obligations, £20,677 was taken out of it. So that the Company was £36 better off than it was a year ago on that account, which in the circumstances he considered satisfactory; it showed the Company was on the right side.

The Reserve Fund (£10,494) was much smaller than it ought to be; nevertheless, it was invested outside the Company, so that if it were required in a hurry it could be realized.

The Special Purposes Fund (£25,842) also had an important investment of over £11,000. It was not so essential that the whole of this Fund should be invested, and in the light of the Company's physical requirements it was a very ample figure. The Special Purposes Fund, he added, really served as an Insurance Fund. The Revenue Account showed that the expenditure on general insurance was over £700. That meant that the Company was insured, quite independently of the Special Purposes Fund, to cover practically all contingencies, such as third party, fire, and matters of that kind. Therefore, the Special Purposes Fund could be regarded as a fund over and beyond any possible duty it might have to serve as an insurance fund, because insurance charges were met out of the revenue account.

The Balance-Sheet.

Coming to the Balance-Sheet, the Chairman pointed out that the investments outside the Company had a book value of £21,828, and that their value at Dec. 31, 1934, was £33,822. He had been in the habit of comparing these two figures, and ventured to congratulate the proprietors upon the very great appreciation of their investments; but at the same time, they should deal with the matter a little cautiously, because although the latter figure could have been realized at Dec. 31 last in actual cash, it should be realized that the premium upon investments was so high that there might be possibility of loss; indeed, if conditions changed, a loss was almost inevitable. They would not remain as at present for ever. So that, although the appreciation of the investments was gratifying, the Company should not attach too great a value to it.

There was nothing on the credit side of the Balance-Sheet to occasion any disquietude. One often found suspense accounts and things of that kind there; but the fact that they were not in the Company's Balance-Sheet rendered the credit side of it a singularly favourable statement, as compared with that of other undertakings.

On the debit side of the Balance-Sheet, the Chairman drew attention to the Co-partnership Fund, which stood at £22,355; it was a little over-invested. It represented a very important achievement in the short period during which co-partnership had been adopted in the Company. Whether one looked at the matter from the point of view of the co-partners, the Directors, or the proprietors, the value of co-partnership must be steadily increasing. It was probably appreciated most by the executive officers of the Company, who could probably remember the state of things before the institution of co-partnership, and their recollection of the conditions in those earlier days and the comparison with the conditions to-day should emphasize the great value of co-partnership to the undertaking. It had often been said that, although co-partnership was a very fine thing, it connected itself only with the Gas Industry. The Chairman said he did not agree with that view. It reminded him of a remark by an American statesman who had said that "liberty was a magnificent thing, but it did not agree with niggers!" Co-partnership could be applied in greater or lesser degree to any undertaking. He knew of a stockbroker who had introduced it into his office, having a staff of 16, and it had paid hand-over-fist. But a very valuable principle underlay co-partnership, and the contribution which the proprietors had enabled the Directors to make to it had not wasted either time or money and had not affected the interests of the proprietors adversely.

The CHAIRMAN formally moved the adoption of the Report and Accounts.

Mr. G. W. CAREY (Deputy-Chairman) seconded.

The resolution for the adoption of the Report and Accounts was then put to the meeting, and carried.

Dividends.

The following resolution was proposed by the CHAIRMAN, seconded by the DEPUTY-CHAIRMAN, and carried unanimously:

> "That there now be declared dividends for the half-year ended Dec. 31, 1934 (being the final dividends for the year), as follows: On the 5% Preference Stock, £5% per annum; on the 5% Stock, £7 10s.% per annum; and on the 3½% Stock, £6% per annum; all less income-tax (making, with the interim dividends already paid on the 5% Stock and 3½% Stock respectively £7 10s.% and £6% for the year); and that such final dividends be paid on Saturday, March 2 instant."

Re-Elections.

The CHAIRMAN, proposing the re-election of the retiring Directors—Mr. F. H. Jones, M.Inst.C.E., and Mr. J. W. Buckley, M.Inst.C.E.—said their names were familiar not only to those attending the meeting, but also to those who had displayed their confidence by sending their proxies. It was a very essential element in the structure of any administration that the Directors should understand what they were trying to direct; that was not always the case! But in this Company there was no exception to that complement and general requirement; the Directors did know their business. There were no two gentlemen who knew the gas business from A to Z better than did Mr. Jones and Mr. Buckley. Mr. Jones had a cosmopolitan experience of a very valuable kind, and Mr. Buckley had a specialized experience of the Company's affairs.

The resolution was seconded by Mr. E. LIONEL BURTON, F.S.A.A., and carried unanimously.

Both Mr. JONES and Mr. BUCKLEY briefly responded.

On the motion of Mr. K. R. MACKAY, seconded by Mr. GODWIN, the meeting re-elected Mr. Hyde C. Burton, F.C.A., an Auditor of the Company.

Votes of Thanks.

The CHAIRMAN moved a hearty vote of thanks to the staff, to all co-partners, and all associated with the results achieved, and said the Directors appreciated their efforts very greatly, inasmuch as they were responsible for the results to which the recipients of the vote of thanks contributed, and also because they had such close contact with them throughout the year. Under the conditions applying to the Hornsey Company, and which he had indicated at the beginning of his address, the maintenance of the standard of success attained by the Company demanded very special effort on the part of those in its service; the Hornsey Company had not the alternatives and the parallel possibilities that other undertakings had, and had to stick to a small shop and continue to produce results on a higher standard than apparently other companies were able to produce. The first contributory cause of the high efficiency and the economy attained was the loyal effort of the co-partner—and the effort of the co-partner as compared with that of one not so qualified was very different indeed. That was a help to the Company's officers; but, even with willing labour, it could produce nothing without intelligent and skilled direction by those officers, and in this connection the Chairman paid tribute to Mr. Mortimore (General Manager and Secretary) and Mr. Gandon (Engineer and District Superintendent).

The resolution was seconded by Mr. F. H. JONES, M.Inst.C.E.

Mr. K. R. MACKAY, who associated himself with the vote of thanks, said that as an old resident within the Company's district he was perhaps in a better position than some other proprietors to appreciate the courtesy and very great attention which consumers received from all the Company's officials. The Company had a most excellent name in the neighbourhood.

The vote of thanks was carried with acclamation.

Mr. MORTIMORE and Mr. GANDON briefly responded, and took the opportunity to acknowledge the help which the Directors

had always been ready to give. They assured the proprietors that they would convey the vote of thanks to all concerned.

Mr. A. W. Oke, proposing a vote of thanks to the Chairman and his co-Directors for their able management of the Company's affairs, said he could remember a time when the Company was in anything but a strong position, whereas it had become perhaps one of the strongest. The reduction of 3·4% in gas sales could be accounted for, and he suggested that where gas companies had been able to show increased gas sales it was perhaps due to the increased number of consumers in developing areas. The fact that an issue of £40,000 4% Debenture Stock was made during the year at 103½% indicated confidence in the Company. He made the suggestion that it might be desirable to sell some of the gilt-edged securities held by the Reserve Fund. (He remembered Consols falling from 114 to 88 at one time.) However, the proprietors were so satisfied with the efforts of the Directors that one hesitated to make even that suggestion to them.

The vote of thanks was seconded by Mr. Godwin, and carried with enthusiasm.

The Chairman, in the course of his response, said he would not back the faculties and talents of his colleagues if they were going into competition with the gentlemen of Throgmorton Street. They might do very well as Directors, but if they were to become speculators he would advise the proprietors to "sack the lot."

Bournemouth Gas and Water Company

Ordinary General Meeting

The One Hundred and Fourteenth Ordinary General Meeting of the Bournemouth Gas and Water Company was held at the offices of the Company, 48, Copthall Avenue, London, E.C., on Friday, March 1—Mr. William Cash (Chairman of the Company) presiding.

The Secretary (Mr. William Cash, Jr.) read the notice convening the meeting.

THE CHAIRMAN'S ADDRESS.

The Chairman said: The Report and Accounts have been circulated, and with your permission we will take them as read as usual. It falls to me, therefore, to move the first resolution, which is: "That the Report and Accounts for the year ended Dec. 31, 1934, as presented to this Meeting, be received and adopted."

I should like in the first instance to apologize for the absence of one of my colleages, Sir John Withers, who has had a very busy time in Parliament and has had to go to the South of France for a rest, and I hope you will excuse his absence to-day. He is one of our most valued colleagues, and I am very sorry he is not here.

Turning to the accounts, I will deal first with the Capital Account. There has been some expenditure on the new works both for gas and water, but they are in the nature of minor additions and not of very great importance. This capital expenditure has been partly on the new Boscombe showrooms, and part of that expenditure is attributable also to water, because the Boscombe showrooms will be used as an office for the water undertaking also. In addition to the Boscombe showrooms there has been some expenditure by way of additional purifiers, benzole plant, washer and liquor plant, waste-heat boiler, and other matters of a minor character, which are included in the item of £23,615. The next big item of expenditure on both undertakings is in respect of mains, as we have laid nearly 19½ miles of additional gas mains and a little over five miles of additional water mains. On the credit side the only issue of capital has been a small amount, due to the co-partners.

Revenue Account.

Turning to the Gas Revenue Account, you will see there has been an increase in sales of gas for the year of 1·58%, which is small; but in view of the fact that we have experienced a very mild summer and an exceptionally mild December in 1934, compared with a very cold December in 1933, it is not altogether unsatisfactory. Under the heading of "Sale of Gas" in the revenue account you will see the item "Power Gas on Works and Used in Process," and that is introduced under that phrase to cover the benzole business in which we are now engaged. Rental of meters and cookers show substantial increases, though the rental of fittings is down a little—but that varies from year to year. The profit on the sale of fittings is quite satisfactory, and the sale of fittings shows an increase in the gross figure this year of nearly £9,000. The total sales through the showroom amount to £71,000, and this covers the sale of cookers, fires, water heaters, &c. Under these heads no fewer than 15,291 pieces of apparatus were fixed during the year, and 1,900 houses were piped for the use of gas. As the report states, there were 3,219 new consumers, but that does not mean in Bournemouth that we have supplied gas to 3,219 additional houses because so many of the modern houses are flats where there may be two, three, four, and even five separate consumers in one building, but it does prove this to us—namely, that gas is still regarded as a necessity of life in these modern houses which are being put up throughout our area.

You will see a very large increase in the expenditure under the head of "Rates"—to the extent of nearly £5,000. The assessment is still under appeal, but undoubtedly the Company will have to bear additional expenses on this account. With regard to Directors' fees, it looks from the accounts as if the Directors have received less remuneration, but if you compare the like figure for the water undertaking you will see that it is merely a re-allocation of the old amount as between the two undertakings.

When you come to appropriations, you will observe that we have only placed £10,000 in regard to gas and £5,000 in regard to water to the Special Purposes Fund instead of the previous year's figures of £15,868 and £5,290 respectively, the reason for that being that the Special Purposes Fund has now grown to such substantial figures that the Directors think the allocation they made for 1934 is adequate. To the Renewal Fund we have given the full allocation, because we do not consider that Fund is excessive having regard to the sort of expenditure which might be incurred either for gas or water in the nature of special renewals which come at intervals. The profit on gas is £1,610 less.

The Showrooms at Boscombe.

As we tell you in the report, and as I envisaged a year ago, we have opened new showrooms at Boscombe. That was done in November, and I can tell you that already they are very much appreciated by the consumers there. The General Manager has brought along some photographs of the exterior and interior of the showrooms, and they are hanging on the walls here to-day, as you can see. The building is in the new modern style, although I do not know that everybody admires this modern type of construction. At the same time, it has the advantage, in this particular case, that the building stands out by itself and is distinctly attractive in the sense that it is different from its immediate surroundings and is of a character which directs attention to it. The General Manager, in connection with the opening of these showrooms, took the opportunity of putting a substantial advertisement in the local Press which emphasized the uses for which gas is available to-day—*i.e.*, cooking, water heating, and house warming with automatic control, refrigerators, attractive and cleanly apparatus, modern designs for gas fires—hygienic and efficient—lighting with switch control, and numerous small appliances such as portable stoves, irons, gas pokers, &c. At the same time, we can undertake larger installations, and we have heard with pleasure from the General Manager only to-day that he has secured the contract for the new East Beach Café which the Corporation have put up. The contract is for the whole of the installation and all the heating, cooking, &c., to be done there will be done by gas. The Corporation are paying us a substantial sum for the installation of the necessary ovens and appliances.

Turning to the water department, the profit is up by £1,621, so that if you take the two departments together the profit for 1934 is practically the same as it was for 1933. Here again we have an increase in the rating of the water undertaking amounting to £2,700, which is a very large addition when you see that the whole of our income has only increased by £640. That is partly due to the fact that we reduced the charges for water in June, 1934, and I am pleased to be able to tell you that in spite of the second year's drought there was an unrestricted supply of water throughout the whole of the area and throughout the whole of the summer. Nevertheless, as showing the effect of some of the discussions that were going on in the Press, our consumers have undoubtedly economized in the use of water. Although it was a very dry year they used less water in 1934 than in 1933 although there was a larger number of consumers, and we are very grateful to them for exercising that amount of care and avoiding waste. The rainfall in Bournemouth in 1934 was 26·65 in., which is 85% of the local average standard calculated over the period 1881-1915, so that Bournemouth, like other places, undoubtedly suffered from a lack of rain.

Water Supplies in Rural Areas.

There has been a great deal said in the Press recently on the question of water supplies in rural areas. Part of our area outside the town of Bournemouth from Longham to Wimborne is of a rural character with scattered dwellings, but we are sure that the needs of that area, so far as they are capable of being met at all, have been met by us, and we have done all we can to give the people in those rural areas a pipe supply where they will avail themselves of it. But it is not invariably the case that where it is available the rural areas are prepared to take the supply. In the majority of cases that is almost entirely a matter of finance and cost. We have been approached, and we have met the local authorities in various directions, and wherever the matter is at all feasible we have given the supply that has been called for, and I have not heard a single word suggesting that the Company has failed in any way to fulfil their statutory obligations or to meet any difficulties that may arise.

There has recently been issued to the Press a report by what

called the Triple Conference constituted by the Institution of Water Engineers, the British Waterworks Association, and the Water Companies' Association, each of whom sent twelve delegates to that Conference; and they issued a report on national water policy. I refer to this because I had the honour of being Chairman of that Conference, and we point out in our report that the Ministry of Health are able and willing to help and the Government have done a great deal to assist in meeting these difficulties with regard to water supply. I would particularly refer to what the Government has done in the way of passing three Acts of Parliament in 1934, one of which was the Rural Water Supplies Act. The Government granted a sum of money to be used for facilitating supplies in rural areas where the County Councils, the Rural District Councils, or the Urban District Councils in conjunction with the Ministry of Health were able to carry out a certain number of schemes. This report recommended the setting up of Regional Advisory Water Committees for the whole of the country, which would strengthen the hands of the Ministry in an advisory capacity for seeing that the resources of the country were used to the best advantage. I think this report on the whole has met with a favourable reception, and, at all events, it does do this—it negatives any suggestion of anything of such a character as a water grid or the nationalization of water which has been put forward in certain directions and which in the view of this Conference is regarded as uneconomic and ill-advised.

Amalgamation and Grouping.

I want now to turn to one other matter, and that is a question which has been exercising minds in the Gas Industry a good deal—namely, amalgamation and grouping. I referred to that matter in my speech to you a year ago when we were contemplating taking over the Lymington and Ringwood Undertakings, and I told you then that there were certain difficulties of a technical character at the Board of Trade. To our regret that delay has been still further prolonged, and it was only on Jan. 1, 1935, that we were able to take over these two areas. In the Lymington area the supply will be afforded from Poole via Christchurch, and the amalgamation will be of great advantage to the consumers there, because the price of gas will be reduced as from Jan. 1, 1935, by 6·75d. per 1,000 c.ft. The General Manager has already opened a temporary showroom in Lymington, and it is obvious that he will have to work very quickly to deal with the developments there.

In the case of Ringwood the supply would be arranged via Longham and Ferndown. The supply is actually through there and a supply has been given from Poole as from Feb. 25, 1935. In that case the reduction in the price is no less than 1s. 1¾d. per 1,000 c.ft., and there is evidence of a real benefit to the consumers and to the shareholders from what we may call real amalgamation—*i.e.*, where there is a physical connection. That has applied to all the additions to the Bournemouth Undertaking since we took over Poole in 1902, Christchurch in 1914, and now Lymington and Ringwood in 1935. The result is that we are now supplying gas from Hamworthy on the west side of Poole Harbour right away to Lymington, a distance of 25 miles. That is a very considerable area, and it proves that gas can be supplied over a large district like that, which, moreover, is ten miles deep from south to north.

On the whole question of grouping I cannot help thinking—although this is a personal view—that grouping for purely financial ends is rather to be deprecated. There is a risk also of the matter being carried too far by over-capitalization. In these two particular instances of Lymington and Ringwood, however, the additional sales of gas will help our overheads. Lymington is growing, and the General Manager has arranged for a showroom there, and at the present time the sales of gas in Lymington will add 28 million c.ft. to our present sales. In the case of Ringwood we shall pick up a certain amount of consumption *en route*, I hope, and that Undertaking will add another 21 million c.ft. to our sales. Since this report was issued we have agreed, subject to minor details and the promotion of a late Bill if we can get it, or a Board of Trade Order, to take over Wimborne. That is a very good little Company, very well conducted, and our mains are already going past their door. Moreover, we already supply water in Wimborne, so that as we are a gas and water Company it seems not unreasonable that we should take over the Wimborne Company. There will be a reduction in price of gas there also, if the matter is concluded on the lines which we propose, of 0·6d. per therm, or 3d. per 1,000 c.ft., and it will add another 39 million c.ft. to our Undertaking.

Consumption per Consumer Falling.

Turning now to more general matters, like other gas companies our average consumption per consumer is falling, and that is a matter of some concern, but it can be explained in certain directions. There are two facts which have to be borne in mind. A large number of smaller houses are being built, and these smaller consumers are necessarily taking a smaller quantity of gas, so that notwithstanding the larger consumption by the hotels and boarding houses, there is the tendency to bring the average consumption down. In the second place there is the undoubted fact that we are supplying more economical and efficient appliances which actually use less gas.

The Gas Undertakings Act of 1934 purported to give us facilities in the way of revising gas charges by special contracts and putting them in force, but it is not an easy matter actually to put in force. I can only assure you that we are watching this very carefully indeed; but even now, with the facilities of the 1934 Act, we are somewhat at a disadvantage compared with electric light undertakings. Furthermore, you must remember that you are the proprietors of a Company which has adopted a very active and forward policy for a great number of years. In other words, as regards appliances, &c., you are dealing now with an area which, I will not say is completely saturated, but at all events it has been well canvassed for the sale of gas, and you may come to a point when individually it is not possible to do very much more.

I can assure you again, however, that both our General Manager and his officers and men—of whom the majority are co-partners—are doing excellent service. They are as keen as they can be and they are always working for the advantage of the Company. Therefore a statement such as the one I heard made in a general way the other day that the men in the Gas Industry are discontented, is certainly not true of this Company. You have always approved the Board's policy to treat the men well and look after them in illness and old age and give them a real share in the business as co-partners, and, furthermore, I can say this, that in this Company and in the Gas Industry generally there is still an excellent opening for young men and we are seeing that they are properly trained in salesmanship both in the showrooms and in business methods. We have just approved the General Manager revising the rates of pay of our junior fitters, and that will cost us something more in 1935; but I think that will be money well spent, because it is very important to have men really well trained and qualified to do the business of the Company, inasmuch as they are the people who come into contact with the consumers.

You have a Company which has a wonderful record, as the General Manager put in his advertisement in the Bournemouth paper the other day. Looking back 30 years it is seen that in 1904, the sales of gas amounted to 527 million c.ft.; in 1914 this had doubled itself to 1,017 million c.ft., while in 1934 the figure had again doubled itself to 2,618 million c.ft.

Finally, on the financial condition of the Company, if you will turn to the Balance-sheet, you will see that the carry forward—after paying dividends—together with the Reserve Fund, the Special Purposes Fund, and the Renewal Fund, amounts to £437,000, and if you add that to the Pension Fund, which is not really the property of the Company at all, but the property of Trustees, it will bring our total reserves to nearly £750,000. There are also the hidden reserves in that the three Funds in question are invested, and these investments show an improvement in market value of over £112,000 or a further appreciation of £39,000 for the year. Therefore, the Company's general financial position is extremely strong and one which I think you will agree is very satisfactory.

I now have great pleasure in moving the resolution that the Report and Accounts be received and adopted.

Sir CHARLES L. MORGAN (Deputy-Chairman) seconded the motion for the adoption of the Report and Accounts, and it was carried unanimously.

Dividends.

The CHAIRMAN then moved the resolution recommending the payment of the dividends on the 6% Preference Stock, the 7% Maximum Dividend Stock, and 9½% on the Standard 5% (sliding-scale) Stock.

Sir GEORGE JESSEL, Bart., seconded the resolution, which was carried.

Re-Elections.

Sir CHARLES L. MORGAN moved the re-election of Mr. William Cash and Sir George Jessel, Bart., as Directors of the Company.

Lieut.-Col. HAROLD W. WOODALL seconded, and the proposition was carried unanimously.

The CHAIRMAN, expressing his appreciation of his re-election to the Board, recalled that he had been associated with the Company for 40 years, and said that in his view the Bournemouth Undertaking was a wonderful one and had made continuous progress throughout the whole of its existence.

The CHAIRMAN, continuing, referred to the re-election of Mr. Robert H. Glen, the Auditor who retired this year, and, commenting upon the additional work which was being thrown upon the auditors by the growth of the Company generally and the further work which would have to be incurred in consequence of the acquisition of the Lymington and Ringwood undertakings, said that the Directors held the view that if the two auditors were granted an increase of remuneration of £50 each it would not be an unreasonable thing to ask.

Mr. H. MILNER WILLIS moved the re-election of Mr. Robert H. Glen as one of the Auditors of the Company and also that the remuneration to both auditors—namely, Mr. Glen and Mr. W. B. Paton—should be increased by £50 per annum each.

This was duly seconded.

The CHAIRMAN, in putting the motion to the Meeting, said that this would mean an increase of total remuneration to the Auditors from £500 to £600.

Directors' Fees.

The CHAIRMAN then mentioned the question of the Directors' fees and pointed out that the present fees of three thousand guineas (or £3,150) were fixed in the year 1923. Since then the sales of gas had increased by 73%, and although the revenue had not increased by that amount owing to reductions in

charges for gas, the revenue had increased very considerably. The water supply had increased by 48% and the revenue from water by about 30% since 1923, so that broadly speaking the business of the Company was half as large again as it was at the time the existing fees were fixed. Having regard to the increasing amount of work to be done and the increasing responsibilities, the Board brought forward for the consideration of its shareholders the suggestion that the fees of the Directors should be increased to £4,000, a figure which was in line with the Directors' fees paid by similar companies.

The resolution was then moved by Mr. F. G. PILLEY and supported by several shareholders, and was put to the meeting and carried unanimously.

Votes of Thanks.

The CHAIRMAN, after remarking that it might be necessary to summon the shareholders together again very shortly for a Wharncliffe Meeting should the arrangements with regard to Wimborne be completed, proposed a vote of thanks to the General Manager and officers, staff, and workpeople at Bournemouth and in London for all their good work during 1934. He said he hoped this would not be regarded merely as a matter of form, because the Board were really grateful to the whole of the staff for the manner in which they worked for the Company. Referring to Mr. Moon, the General Manager, he said that Mr. Moon was a great personality in Bournemouth apart from the Company, and he was very much appreciated in the town. Moreover, he was not only the Engineer to the Company but the General Manager, and although he had officers working under him the burden upon Mr. Moon was very heavy indeed, and it was only to be hoped that he would not overdo it.

Mr. P. G. G. MOON, acknowledging the vote of thanks, said he was very glad to have the opportunity of conveying it to the staff and workmen because it was really a well deserved tribute, They were loyal, very efficient, and keen, and he was quite sure they were grateful for the conditions under which the Company enabled them to live. He had said this, he added, on many occasions previously, but he was nevertheless very pleased to be able to assure the Board and the shareholders of the keenness of the staff and of their pride in the Company. With that spirit behind them they were bound to do good work, and in his judgment they most definitely did. On behalf of the staff and workmen and himself he thanked the shareholders for this appreciation of their efforts.

Gas Undertakings' Results for 1934

Dudley.

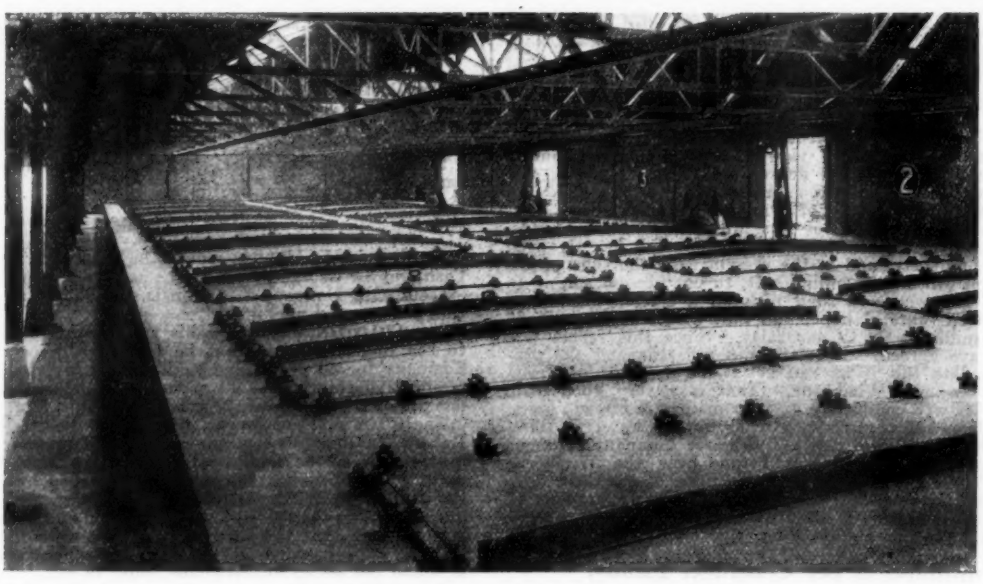
The Directors' report of the Dudley, Brierley Hill, and District Gas Company shows that the sales of gas in 1934 were 2·2% more than during the previous year, this being a record for all time for the Company. There has been a considerable increase in the sale of gas fires. New outlets have been found for the use of gas by the Company's Industrial Department, and the use of gas in factories shows the largest increase of any section of the Company's business. The Company has been entrusted with the lighting of all roads on the Priory Estate, Dudley, and with the re-lighting of Tipton Road, Dudley. The market for residuals has remained fairly steady, but with a downward tendency. An up-to-date plant is now in the process of erection for the better screening of coke and its grading into suitable size for various uses. The gross profit has been maintained at practically the same figure as last year. The Directors, therefore, have reduced the suspense renewals account by £2,500, and recommend the payment of dividends at the rate of 5% per annum upon the ordinary and preference stock, leaving a carry forward of some £718 more than last year.

Halesowen.

The annual report of the Directors of the Halesowen Gas Company shows that the income on the revenue account amounted to £24,002, a sum of £19,703 being realized from the sale of gas and £4,190 from residuals. The manufacture of gas cost £11,353 and distribution £5,921. The profit on the year's working amounted to £2,265, to which was added a sum of £2,045 carried forward from last year's accounts. After the payment of interest on the debenture bonds and the interim dividend paid in September last there was a balance of £3,111 available, and the Directors recommended payment of a final dividend of £6% on the "A" shares, making £11% for the year, and £4 4s.% on the "B" shares, making £7 14s.% for the year, less tax, and to carry £2,213 forward.

Hastings (S.E. Gas Corporation).

The accounts of the Hastings and St. Leonards Gas Company for the year ended Dec. 31, 1934, show that after paying, in respect of the June half-year, dividends at the rate of: 7% per annum on the 5% converted stock, £5 10s.% per annum on the 3½% converted stock, £6 8s.% per annum on the 5% additional stock,



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and after making provision for depreciation and contributing £1,300 to the special purposes fund, there is a total available balance of £15,378, out of which the Directors recommend the following dividends in respect of the December half-year, viz.: On the 5% converted stock at the rate of £7% per annum, on the 3½% converted stock at the rate of £5 10s.% per annum, on the 5% additional stock at the rate of £6 8s.% per annum, which will absorb the sum of £11,283, leaving £4,095 to be carried forward to the credit of the current year. The number of consumers has increased by 324 during the year and there has been a considerable expansion in the demand for appliances, particularly on hire-purchase.

Lea Bridge.

The report of the Directors and statement of accounts of the Lea Bridge Gas Company for the year ended Dec. 31, 1934, state that the profit as per the revenue account amounts to £37,052, the amount brought forward from the previous year, after providing for the final dividends for 1933, £40,692, and the interest received during the year, £65, making a total of £77,810. After deducting the charges for interest amounting to £7,446, and income-tax, £3,683, and transferring to the Employees' Pension Fund the sum of £20,000, the balance available for disposal is £46,681. Dividends for the half-year ended June 30, 1934, were paid on Sept. 1, 1934, at the following rates —viz., 5% per annum on the 5% preference stock, 6% per annum on the 6% preference stock, and 8½% per annum on the consolidated ordinary stock (all less income-tax), and the Directors now recommend the declaration of dividends for the half-year ended Dec. 31, 1934, at the same rates (all less income-tax), payable on Friday, March 15, 1935. This appropriation, including the dividends paid for the half-year ended June 30, 1934, amounts to £24,346, leaving a balance to be carried forward of £22,336. During the year £25,000 4% perpetual debenture stock was issued. The sale of gas during the year shows an increase of 2·4% compared with that for 1933. The Directors regret to report the death of Mr. Robert E. Gisburne, F.C.A., who served the proprietors in the capacity of auditor from 1922 to 1933.

Leighton Buzzard.

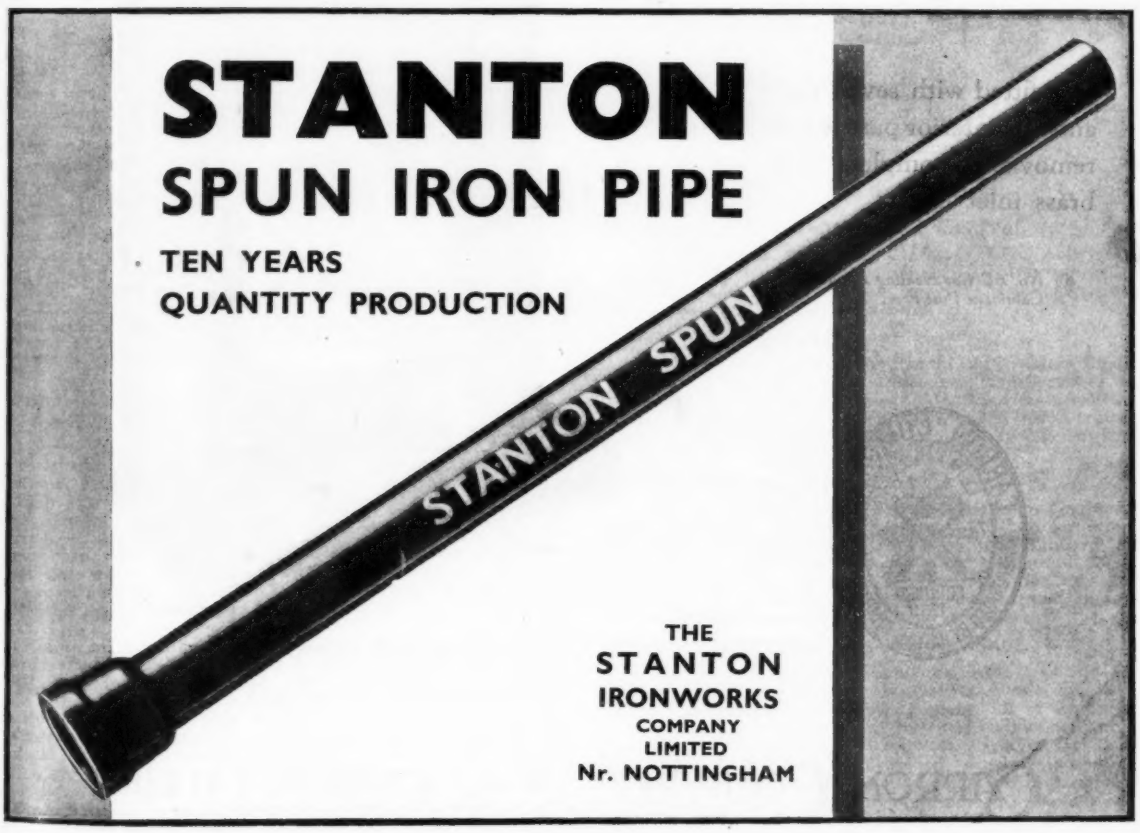
The report of the Directors of the Leighton Buzzard Gas Company for the year ended Dec. 31, 1934, states that the receipts from the sale of gas totalled £18,829. The revenue account shows a balance of £4,198, and the balance standing to the credit of the profit and loss account is £3,583. The Directors recommend that a dividend at the rate of 6% per annum be paid on the consolidated ordinary stock, amounting to £3,112, from which income-tax amounting to £700 has to be deducted. The vacancy on the Board caused by the death of Mr. T. Bromhead Bassett, who was a valued Director of the Company for 26 years, has been filled by the appointment of Mr. L. F. Vick.

Northwich.

The Directors' report of the Northwich Gas Company for the year ended Dec. 31, 1934, states that the Directors announce with regret the death of Mr. R. Taylor. The year's working had been very satisfactory, although there was a slight decrease in sale of gas of 1,933 therms. New mains had been laid down in the urban and rural areas, and additional apparatus had been fixed during the year, which was evidence of progress. The revenue account showed a profit of £4,242 and after payment of interim dividends and interest on loans, there was, with the addition of the balance brought forward, a disposable balance of £5,106. Dividends were declared at the rate of 4% per annum on the preference shares, 5% per annum on the preference stock, and 7% per annum on the ordinary stock (all less income-tax) for the past half-year, which will absorb £2,374, making, with interim dividends, 4%, 5%, and 6% respectively for the whole year, and transfer £250 to waterless holder suspense account, leaving a balance of £2,482 to be carried forward. The dividends are payable on March 25. Mr. H. N. Aitchison was elected a Director to fill the vacancy caused by the death of Mr. R. Taylor.

Sheppy (S.E. Gas Corporation).

The accounts of the Sheppy Gas Company for the year ended Dec. 31, 1934, show that, after paying in respect of the first half-year dividends at the rate of £4% per annum on the "A" preference shares, £5% per annum on the consolidated ordinary stock, £6% per annum on the preference stock, and after contributing the sum of £500 to the renewal fund and £500 to the special purposes fund, there is a total available balance of £7,533, out of which the Directors recommend the payment of the following dividends in respect of the second half-year—viz.: On the "A" preference shares at the rate of £4% per annum, on the consolidated ordinary stock at the rate of £5 5s.% per annum, and on the preference stock at the rate of £6% per annum (all less income-tax), which will absorb the sum of £2,165, leaving £5,368 to be carried forward to the credit of the current year. The sale of gas during the past year shows an increase of 7·8%. There has been an addition for the year to the number of consumers of 244.



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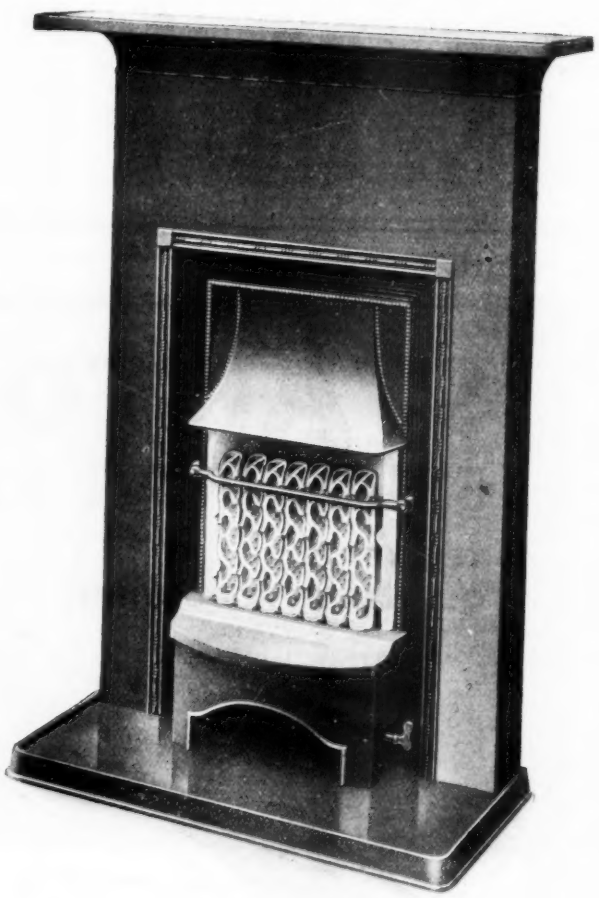

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Gas Markets and Manufactures

Stock Market Report

(For Stock and Share List, see later page)

The chief feature last week was the activity in gold-mining shares brought about by the weakness in the sterling exchange and subsequent increase in the price of the commodity to the record figure of 146s. 10½d. per fine ounce. The interest in gilt-edged securities was well maintained, and prices showed small gains on the week. Latest reports and dividends, especially in the iron, coal, and steel industries, are very encouraging and have given a stimulus to the Industrial market, which closed firm, Courtaulds and Austin Motor shares being prominent.

For the first time after a long period of rising prices, the Gas Market has become depressed. For no apparent reason, except perhaps to increase the yields on these securities, there was an almost wholesale marking down of prices last week, particularly among the stocks of the principal undertakings. Gas Light units eased a further 3d. to 26s. 6d. (yielding £4 4s. 6d.%), and South Metropolitan dropped 7 points to 127½, the yield in this case, on the basis of last year's dividend, now working out at a trifle over 4½%. The ordinary stock of the Tottenham and Wandsworth Companies both dropped 7 points, bringing the yields up to about 4¼%. Uxbridge fell 6 to 162½, while, on the Newcastle Exchange, South Shields consolidated dropped 9 points to 175, at which price, on a dividend of 8½%, the return is £4 17s.%.

Having regard to the above comparatively high yields, it is not unreasonable to assume that, given an increased demand for these securities and a continuance of strength in the gilt-edged market, prices should ultimately revert to their former levels.

Current Sales of Gas Products

The London Market for Tar Products.

LONDON, *March* 4.

The prices of tar products remain unchanged, with the exception of pitch which is a little weaker.

Price is stated to be 40s. to 42s. 6d. per ton f.o.b.

Creosote, 5d. to 5½d.

Refined tar, 4d. per gallon in bulk at makers' works.

Pure toluole, 2s. 2d. to 2s. 3d.; pure benzole, 1s. 9d. to 1s. 10d.; 95/160 solvent naphtha, 1s. 5d.; and 90/160 pyridine, about 5s. 9d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

March 4.

The average prices of gas-works products during the week were: Gas-works tar, 20s. to 25s. Pitch—East Coast, 40s. to 42s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 40s. to 42s. 6d.* Toluole, naked, North, 1s. 8d. to 1s. 9d. Coal-tar crude naphtha, in bulk, North, 6½d. to 6¾d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 4¾d. Heavy naphtha, North, 9¾d. to 10¾d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅝d. to 4½d.; low gravity, 4⅝d. to 4½d.; Scotland, 4⅝d. to 4½d. Heavy oils, in bulk, North, 4d. to 4¼d. Carbolic acid, 60's, 1s. 9d. to 1s. 10d. Naphthalene, £10 to £11. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. to 3d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *March* 2.

While deliveries are being effected quite rapidly, new business continues rather scarce.

Crude gas-works tar.—Actual value remains at 29s. to 31s. per ton *ex* works in bulk.

Pitch.—Old contracts are being completed rapidly, but consumers are slow to commit themselves to further quantities. Quotations are unchanged at 43s. to 44s. per ton f.o.b. Glasgow for export and 42s. 6d. per ton *ex* works in bulk for home trade.

Refined tar is quietly steady at 3d. to 3⅛d. per gallon f.o.r. naked.

Creosote oil is still definitely scarce, and production is well looked after for many months forward. Values are largely nominal as follows: B.E.S.A. Specification, 4¾d. to 5d. per gallon; low gravity, 4¾d. to 5d. per gallon; and neutral oil, 4⅝d. to 4¾d. per gallon; all f.o.r. in bulk.

Cresylic acid.—Interest is lacking, but prices are maintained. Pale, 97/99%, 1s. 3d. to 1s. 4d. per gallon; dark, 97/99%, 1s. 1d. to 1s. 2d. per gallon; and pale, 99/100%, 1s. 4d. to 1s. 5d. per gallon; all *ex* works.

Crude naphtha is being sold at 4¼d. to 4¾d. per gallon, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 3d. to 1s. 4d. per gallon, and 90/190 heavy is 9d. to 10d. per gallon.

Motor benzole is lower at 1s. 2½d. to 1s. 3½d. per gallon in bulk *ex* works.

Pyridines.—90/160 grade is 5s. 6d. to 6s. per gallon, and 90/140 grade 6s. to 6s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole . . .	0	8½	to	0	9	per gallon at works
Motor ,, . . .	1	2	,,	1	2½	,, ,, ,,
90% ,, . . .	1	3	,,	1	3½	,, ,, ,,
Pure ,, . . .	1	6½	,,	1	7	,, ,, ,,

Contracts Advertised To-Day

Coal.
Leigh Gas Committee. [p. 594.]
Wigan Gas Department. [p. 594.]

Cookers, Fires, Geysers, Washing Machines, &c.
Lincoln Gas Department. [p. 594.]

Gasholder.
Yeovil Gas Department. [p. 594.]

General Stores, Tinware, Proprietary Articles, &c.
Halifax Gas Department. [p. 594.]
Lincoln Gas Department. [p. 594.]

Governors.
Stoke-on-Trent Gas Department. [p. 594].

Lighting Goods.
Lincoln Gas Department. [p. 594.]

Meter (Connersville).
Stoke-on-Trent Gas Department [p. 594.]

Meters, &c.
Halifax Gas Department. [p. 594.]
Lincoln Gas Department. [p. 594.]
Stoke-on-Trent Gas Department. [p. 594].

Oxide of Iron.
Lincoln Gas Department. [p. 594.]

Paints, Oils, &c.
Halifax Gas Department. [p. 594.]
Lincoln Gas Department. [p. 594.]

Pipes, &c.
Burnley Gas Department. [p. 594.]
Halifax Gas Department. [p. 594.]
Lincoln Gas Department. [p. 594.]
Stoke-on-Trent Gas Department. [p. 594.]

Sulphuric Acid.
Lincoln Gas Department. [p. 594.]

Valves and Cocks.
Halifax Gas Department. [p. 594.]

Trade Notes

Accounting for Management Control.

Powers-Samas Accounting Machines, Ltd., Aldwych House, London, W.C. 2, have recently published a new enlarged edition of their booklet "Accounting for Management Control," and we are indebted to them for a copy.

Speed Transformers.

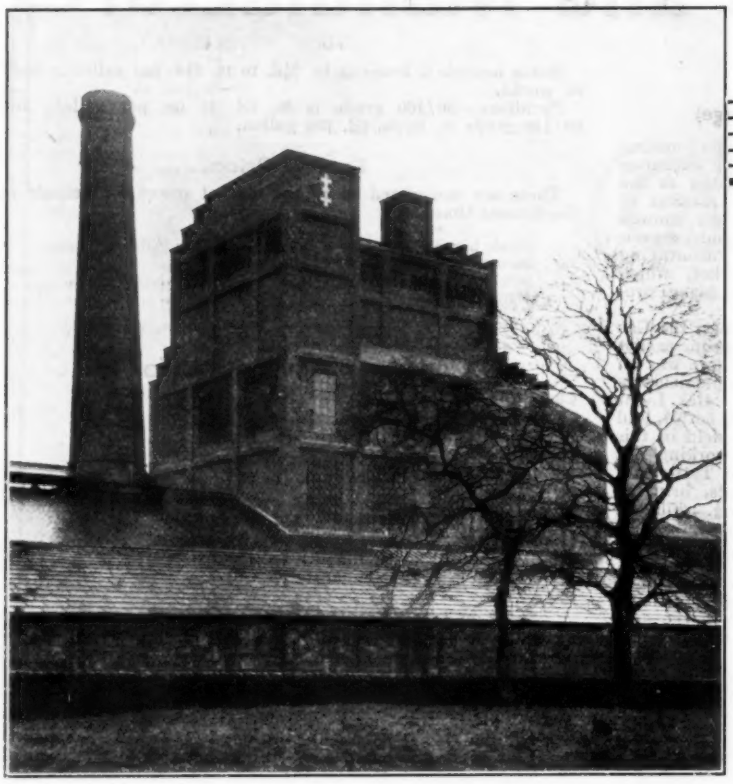
We have received from the Renold and Coventry Chain Company, Ltd., Renold Works, Didsbury, Manchester, a copy of their recently published catalogue on speed transformers. The units described in the catalogue are called speed transformers and not reduction units, as they are equally efficient either for increasing or decreasing speeds.

Information on Aluminium.

We are indebted to the British Aluminium Company, Ltd., Adelaide House, King William Street, E.C. 4, for informative literature concerning the properties and standard sizes of aluminium. These leaflets should prove very useful to all those interested in the utilization of aluminium for any purposes. Dealing with twelve different aspects of aluminium, these leaflets are available on request.

Electrically-Welded Gas-Works Plant.

The Oxley Engineering Company, Ltd., Gas and Chemical Plant and Electric Welding Specialists, Leeds, 10, have been given contracts for the following plant, all of which is to be electrically-welded throughout by their well-known process: A spirally-guided gasholder, 80,000 c.ft. capacity, in steel tank, claimed to be the largest all-welded gasholder in this country; an all-welded column-guided gasholder for Imperial Chemical Industries at Billingham; a column-guided gasholder in Wales, which incorporates a distance control indicator; the re-sheeting of two lifts of a 105,000 c.ft. gasholder; and a set of purifiers of mild steel construction.



THIS installation of Glover-West Vertical Retorts at the gas works of the Yeadon & Guiseley Gas Company was put into service on December 27th, 1934

The first month's run under normal conditions of the Glover-West plant at Yeadon gave these results:

Coal Carbonized...	**... YORKS. GAS NUTS**
Total Gas Made ...	**...18,104,000 C. FT.**
Gas Made per Ton ...	**17,060 C. FT.**
Calorific Value (*undebenzolized*)	**500 B.Th.U./C.FT.**
Therms per Ton	**85·3**
West's Steaming Curve ...	**No. 1 PLUS**

More than 360 installations of Glover-West verticals are in service

WEST'S GAS IMPROVEMENT CO., LTD.

LONDON: REGENT HOUSE, KINGSWAY, W.C. 2. 'Phone: Holborn 4108. 'Grams: "Imvertret, Westcent." **MANCHESTER:** ALBION IRONWORKS, MILES PLATTING. 'Phone: Collyhurst 2961. 'Grams: "Stoker, Manchester."

STOCK AND SHARE LIST

Official Quotations on the London and Provincial Stock Exchanges

Issue. £	Share	When ex- Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations, March 1.	Rise or Fall on Week.	Transactions, Lowest and Highest Prices During the Week.
1,551,868	Stk.	Sept. 10	7	7	Alliance & Dublin Ord. ...	135—145	...	...
374,000	,,	Dec. 17	4	4	Do. 4 p.c. Deb. ...	90—100	...	...
557,655	,,	Feb. 18	7	7	Barnet Ord. 7 p.c.	167—172*	...	...
300,000	1	Oct. 8	1/9⅜	1/4⅜	Bombay, Ltd.	30/—32/-	...	30/9
178,480	Stk.	Feb. 18	9½	9½	Bournemouth sliding scale ...	223—233*	...	...
550,050	,,	,,	7	7	Do. 7 p.c. max. ...	170—175*	...	172—173½
439,160	,,	,,	6	6	Do. 6 p.c. Pref. ...	148—153*	...	...
50,000	,,	Dec. 17	3	3	Do. 3 p.c. Deb. ...	86—91	...	...
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	107—112	...	109—110
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	130—135	...	...
357,900	,,	Feb. 18	7½	7½	Brighton, &c., 6 p.c. Con. ...	178—183*	...	182½
649,955	,,	,,	6½	6½	Do. 5 p.c. Con. ...	159—164*	...	160—163
205,500	,,	,,	6	6	Do. 6 p.c. B. Pref.	145—150*	...	...
1,487,500	,,	Feb. 4	5	5	Bristol, 5 p.c. max.	119—120*a*	—½	...
120,420	,,	Dec. 17	4	4	Do. 1st 4 p.c. Deb. ...	102—104*a*	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	102—104*a*	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	122—124*a*	...	...
855,000	,,	Sept. 24	8	7	British Ord.	173—178	—1	173
100,000	,,	Dec. 17	7	7	Do. 7 p.c. Pref.	160—165	...	163—164
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...	98—98½
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	111—116	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	...
100,000	10	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1—3	...	...
150,000	Stk.	Dec. 17	4½	4½	Do. 4½ p.c. Deb. ...	88—93	...	90½
626,860	,,	Jan. 21	6	6	Cardiff Con. Ord.	133—138	...	...
237,860	,,	Dec. 17	5	5	Do. 5 p.c. Red. Deb.	105—110	...	...
157,150	,,	Feb. 4	5	6½	Chester 5 p.c. Ord.	111—116*b*	...	...
98,936	1	Sept. 24	2/-	2/-	Colombo, Ltd., Ord.	1⅞—1⅞	...	...
24,500	1	,,	1/4⅜	1/4⅜	Do. 7 p.c. Pref. ...	19/6—21/6	...	...
609,204	1	Sept. 24	-/11/48	-/11/48	Colonial Gas Assn. Ltd. Ord.	20/—22/-	...	21/6—22/3
296,053	1	,,	1/3·30	1/3·30	Do. 8 p.c. Pref.	25/—27/-	...	26/—26/9
1,775,005	Stk.	Feb. 4	5	6	Commercial Ord.	117—122	—1	118—119½
475,000	,,	Dec. 3	3	3	Do. 3 p.c. Deb. ...	87—92	—½	...
286,344	,,	Feb. 18	5	5	Do. 5 p.c. Deb. ...	123—128*	...	...
807,560	,,	Feb. 18	7	7	Croydon sliding scale... ...	163—168*	—2	164½—165½
569,590	,,	,,	5	5	Do. max. div.	114—119*	...	115—117½
620,385	,,	Dec. 17	5	5	Do. 5 p.c. Deb.	130—135	...	132
542,270	,,	Feb. 18	7	10	Derby Con.	200—210*c*	...	...
55,000	,,	Dec. 17	4	4	Do. 4 p.c. Deb.	100—105*c*	...	...
239,000	,,	Feb. 4	5	5	East Hull Ord. 5 p.c.	111—116	...	111—114½
181,625	,,	Feb. 4	6	6	East Surrey Ord 5 p.c. ...	138—143	...	...
175,609	,,	Dec. 17	5	5	Do. 5 p.c. Deb. ...	123—128	...	...
1,002,180	,,	Sept. 10	†7	†5	European, Ltd.	118—123	...	120
19,313,481	,,	Feb. 4	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	26/—27/-*f*	—3/8	25/9—26/7½
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	90—95	—2½	91—92½
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	106—111	—2	107—110
6,102,497	,,	Dec. 3	3	3	Do. 3 p.c. Con. Deb. ...	88—93	—1	88½—90½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	116—119	...	117½—118
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb. ...	114—117	—2	116½
270,466	,,	Feb. 18	6	6	Harrogate New Cons. ...	138—143*	...	...
140,000	1	Sept. 24	1/7½	1/7½	Hongkong & China, Ltd. ...	1⅝—1⅝	...	...
213,200	Stk.	Feb. 18	6	6	Hornsey Con. 3½ p.c.... ...	135—140*	...	...
5,600,000	,,	Oct. 22	14	10	Imperial Continental Cap. ...	215—220	—2	216½—219
223,130	,,	Jan. 21	3½	3½	Do. 3½ p.c. Red. Debs.	91—96*	...	...
285,242	,,	Feb. 18	8½	8½	Lea Bridge 5 p.c. Ord. ...	187—197*	...	...
2,167,410	,,	Feb. 18	6	6	Liverpool 5 p.c. Ord.... ...	138½—142½*b*	—2½	...
245,500	,,	Dec. 17	5	5	Do. 5 p.c. Red. Pref. ...	105—110*b*	...	...
306,083	,,	Jan. 16	4	4	Do. 4 p.c. Deb.	104—107*b*	...	...
165,736	,,	Feb. 18	8	10	Maidstone 5 p.c. Cap. ...	185—195*	...	...
63,480	,,	Dec. 17	3	3	Do. 3 p.c. Deb. ...	83—88	...	...
75,000	,,	Dec. 3	†10	†10	Malta & Mediterranean ...	205—215	...	...
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	102—107	...	...
231,978	Stk.	Feb. 4	5	5	M. S. Utility "C" Cons. ...	110—115	—3	...
818,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	101—106	...	...
360,075	,,	Dec. 17	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
148,955	,,	,,	5	†5	Do. 5 p.c. Deb. ...	127—132	...	...
125,000	—	Jan. 2	11/8	3½	Do. 3½ p.c. Rd. Rg. Bds.	98—101	...	...
675,000	,,	May 28	†6	†3	Montevideo, Ltd.	55—65	...	...
2,061,315	,,	Feb. 18	5	5⅜	Newcastle & Gateshead Con.	25 3—26/3*df*	—/9	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	106—107*d*	...	...
776,706	,,	Dec. 17	3½	3½	Do. 3½ p.c. Deb. ...	101½—102½*d*	+1	...
277,285	,,	Oct 8	5	5	Do. 5 p.c. Deb. '43 ...	105—107*d*	...	...
274,000	,,	Feb. 4	5	5	Newport (Mon.) 5 p.c. max....	108—110*a*	...	...
225,000	,,	Feb. 18	7½	7½	North Middlesex 6 p.c. Con.	172—177*	...	174
396,160	,,	Feb. 4	5	5	Northampton 5 p.c. max. ...	105—110	...	...
300,000	,,	Nov. 5	†7	†9	Oriental, Ltd.	170—175	...	...
416,617	,,	Dec. 17	8	8	Plym'th & Stonehouse 5 p.c.	182—187	...	...
504,416	,,	Feb. 4	8	8½	Portsm'th Con. Stk. 4 p.c. Std.	182—187	...	187
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	110—115	...	...
114,000	,,	Jan. 21	5	5	Preston 5 p.c. Pref.	108—113	...	...
1,736,968	Stk.	Aug. 27	6	6	Sheffield Cons.	146—148*e*	—2	...
95,000	,,	Jan. 7	4	4	Do. 4 p.c. Deb.	100—104*e*	...	...
133,201	,,	Feb. 18	8½	5	Shrewsbury 5 p.c. Ord. ...	153—158*	...	...
90,000	10	May 28	†4	†3	South African	3—4	...	7/8
927,177	1	Sept. 10	1/2⅜	1/2⅜	South East'n Gas Cn. Ld. Ord.	28 —30 -	—1/-	28/3—28/6
736,061	1	,,	-/10½	-/10½	Do, 4½ p.c. Red. Cum. Pref.	22/6—23/6	...	23/-
450,000	Stk.	Feb. 4	74/4	4	Do. 4 p.c. Red. Deb. ...	100—103*	...	...
6,709,895	,,	Feb. 4	5	6½	South Met. Ord.	125—130	—7	125—130
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf. ...	149—154	—1	...
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf. ...	106—109	...	106½
1,895,445	,,	Dec. 17	3	3	Do. 3 p.c. Deb.	86—91	—2	...
1,000,000	,,	Jan. 7	5	5	Do. 5 p.c. Red. Deb....	118—121	...	...
209,820	,,	Feb. 18	8½	8½	South Shields Con.	174—176*d*	—9	...
1,543,795	,,	Feb. 18	6	6	South Suburban Ord 5 p.c. ...	140—145*	—3	140
512,825	,,	,,	5	5	Do. 5 p.c. Pref. ...	122—127*	...	126
500,000	,,	,,	4	4	Do. 4 p.c. Pref. ...	108—111*	...	...
868,837	,,	Dec. 17	5	5	Do. 5 p.c. Deb. ...	130—135	...	...
250,000	,,	,,	4	4	Do. 4 p.c. Deb. ...	106—110	...	...
647,740	,,	Feb. 4	5	5	Southampt'n Ord. 5 p.c. max.	116—121	...	...
121,275	,,	Dec. 17	4	4	Do. 4 p.c. Deb.	102—107	...	...
350,000	,,	Feb. 4	5½	5½	Swansea 5½ p.c. Red. Pref. ...	113—118	...	...
200,000	,,	Dec. 17	6½	6½	Do. 6, p.c. Red. Deb. ...	100—105	...	...
1,076,490	,,	Feb. 18	6½	6½	Tottenham and District Ord.	155—160*	—7	156
409,835	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	131—136*	...	136½
62,235	,,	,,	5	5	Do. 5 p.c. Pref. ...	120—125*	...	...
199,005	,,	Dec. 3	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
369,774	,,	Feb. 4	7	7	Uxbridge, &c., 5 p.c.	160—165	—6	163—168½
108,330	,,	,,	5	5	Do. 5 p.c. Pref. ...	122—127	...	...
1,326,700	,,	Feb. 4	7	7	Wandsworth Consolidated ...	160—165	—7	160—168
1,371,373	,,	,,	5	5	Do. 5 p.c. Pref. ...	123—128	—2	123—125
1,317,964	,,	Dec. 17	5	5	Do. 5 p.c. Deb. ...	132—137	...	134½—136½
208,300	,,	,,	26/8	4	Do. 4 p.c. Deb. ...	108—113	...	...
158,400	,,	Feb. 18	5	6*g*	Winchester W. & G. 5 p.c. Con.	118—123*	...	...

Quotations at :—*a*.—Bristol. *b*.—Liverpool. *c*.—Nottingham. *d*.—Newcastle. *e*.—Sheffield. *f*.—The quotation is per £1 of stock. *g*.—Paid £3, including 10s. on account of back dividends. * Ex. div. † Paid free of income-tax. ‡ For year.

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Prospectus and Form of Tender (which latter must be sent in by 11 o'clock on Thursday, 14th March) may be obtained of A. & W. RICHARDS, 37, WALBROOK, E.C. 4.

PATENTS.

THE Proprietor of British Patent No. 367,363 is prepared to Sell the Patent or to Licence British Manufacturers to work thereunder. It relates to "A Process and Apparatus for Gasifying Finely Divided Fuels."

Address: BOULT, WADE, & TENNANT, 112, HATTON GARDEN, LONDON, E.C. 1.

THE Proprietor of British Patents Nos. 341,391, dated July 8, 1929, and 323,829, dated October 20, 1928, relating to "Improvements in Processes for Polymerizing Unsaturated Hydrocarbon Gases" and "Method and Apparatus for Producing Low-Temperature Coke" respectively, is desirous of entering into arrangements by way of a Licence or otherwise on reasonable terms for the purpose of exploiting the above Patents and ensuring their practical working in Great Britain.

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